VOL. XLVIII. No.10 OCTOBER 1963

MECCANO MAGAZINE

1/3

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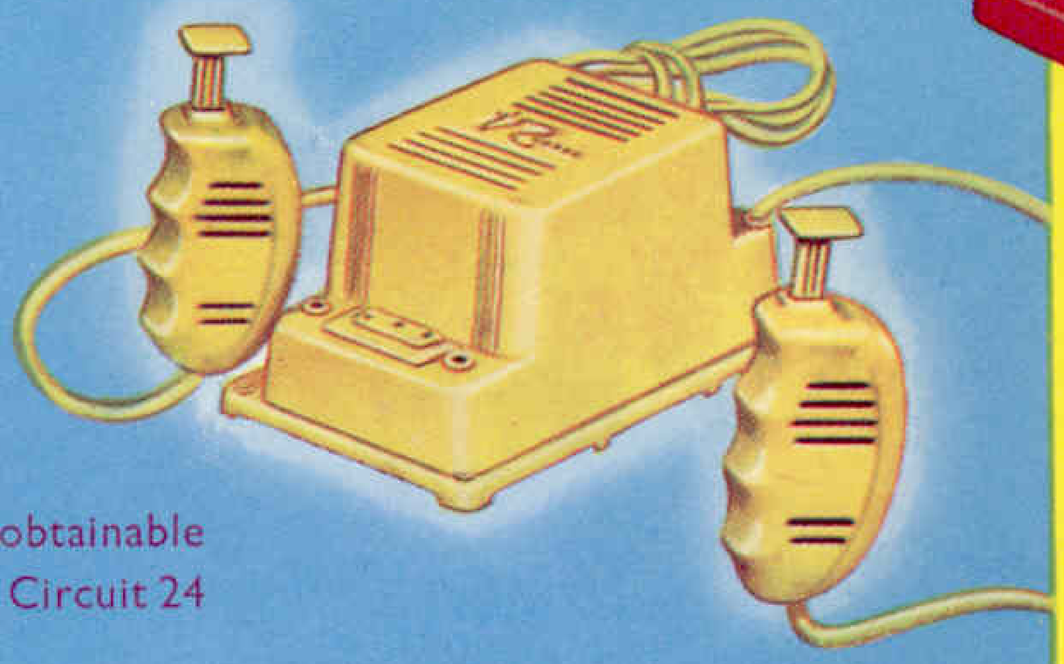

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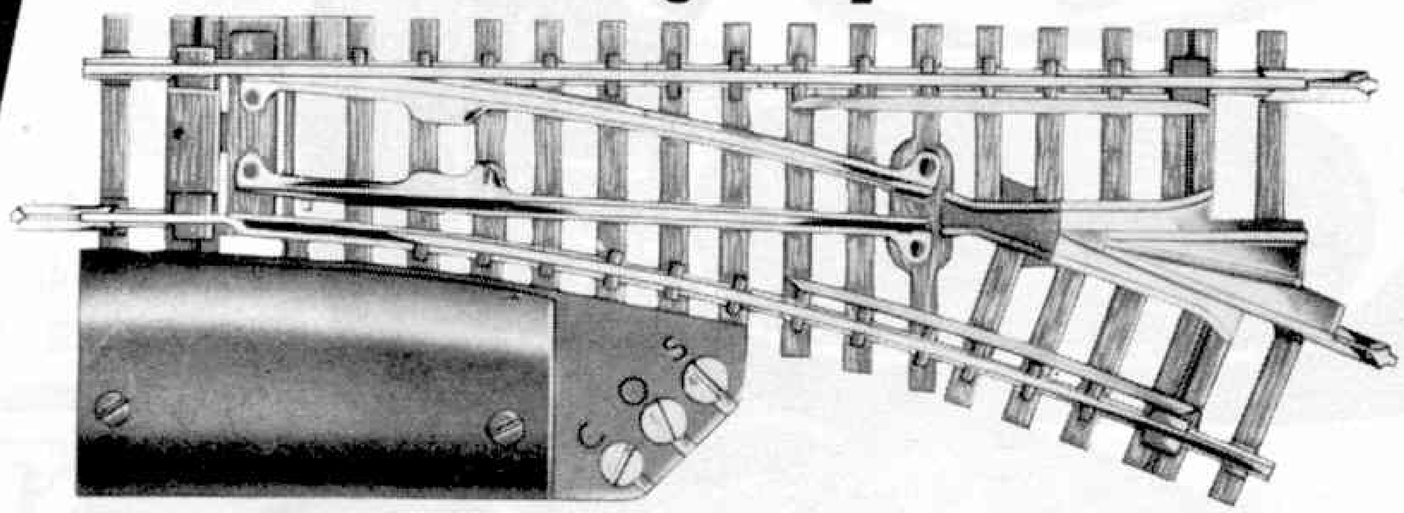

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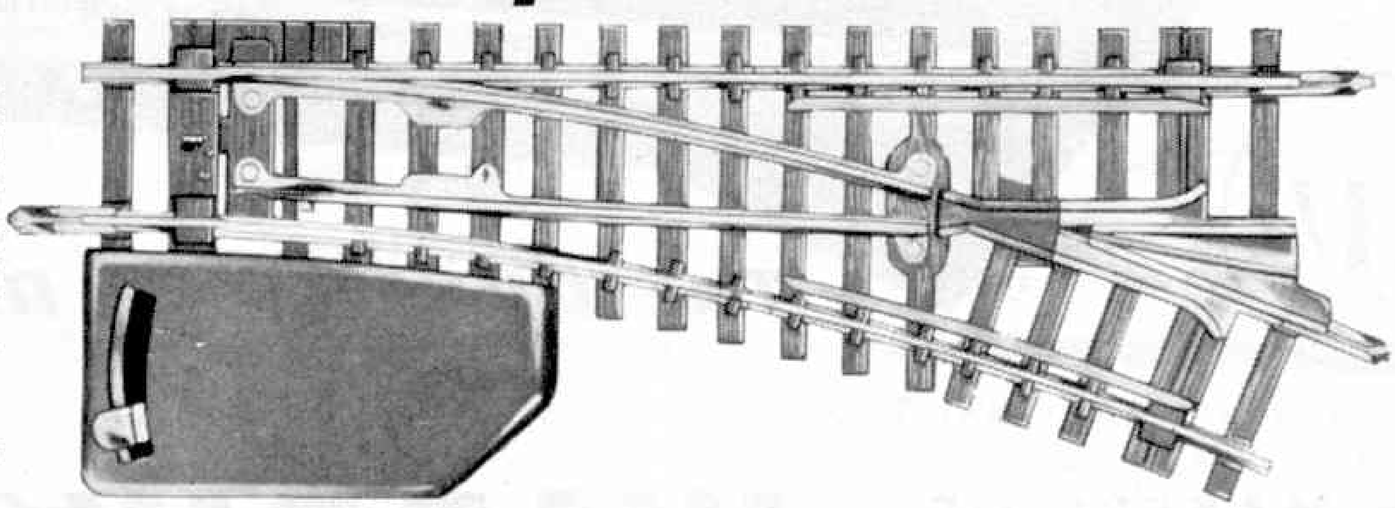

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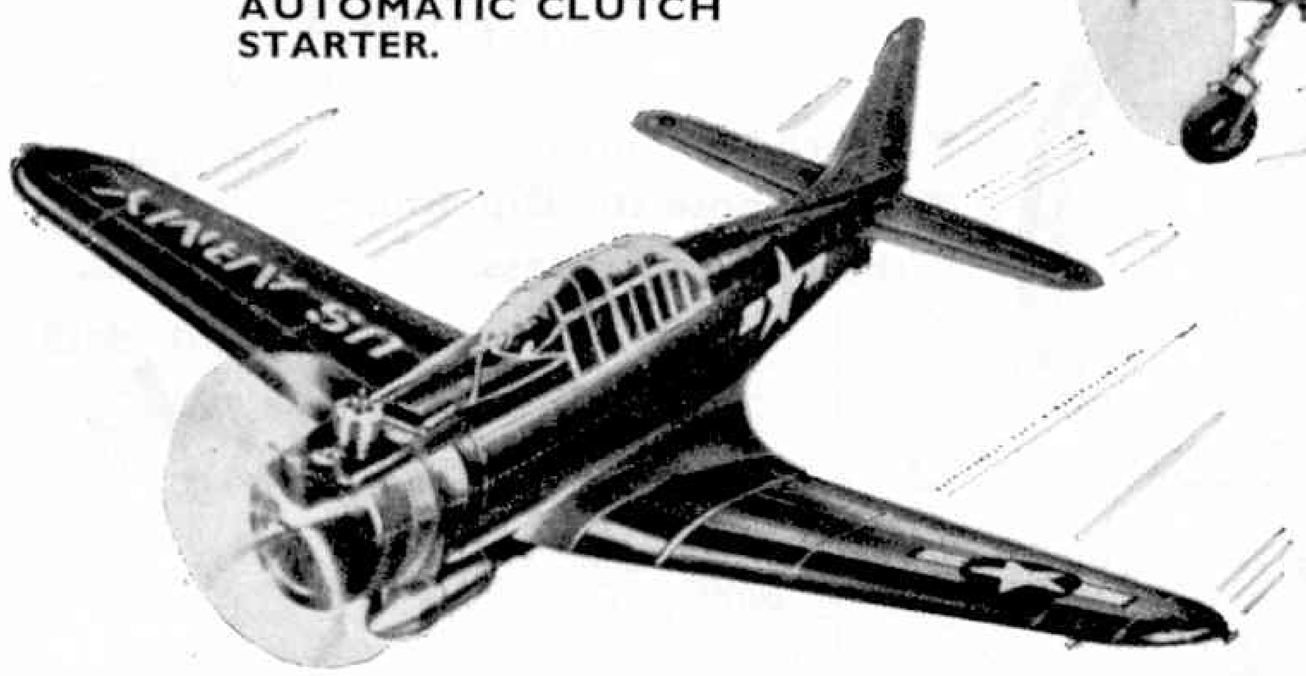

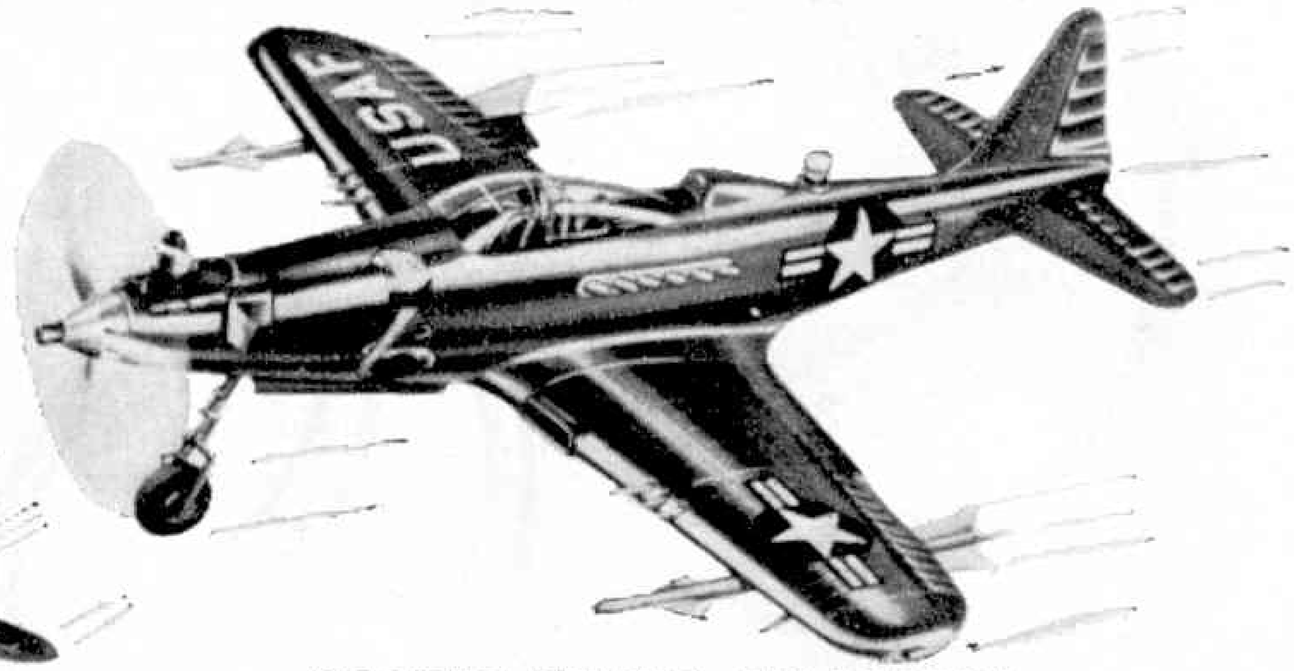

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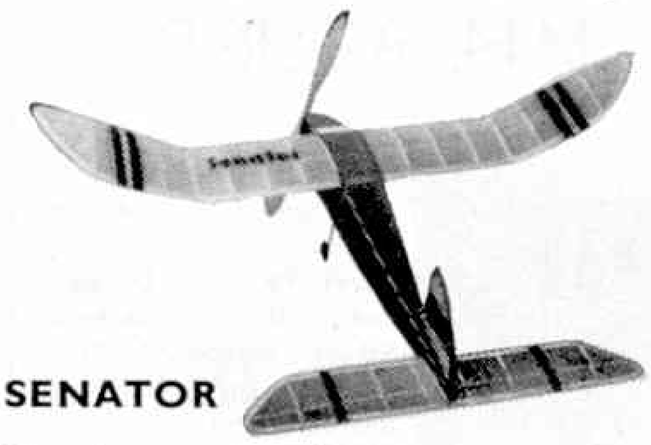

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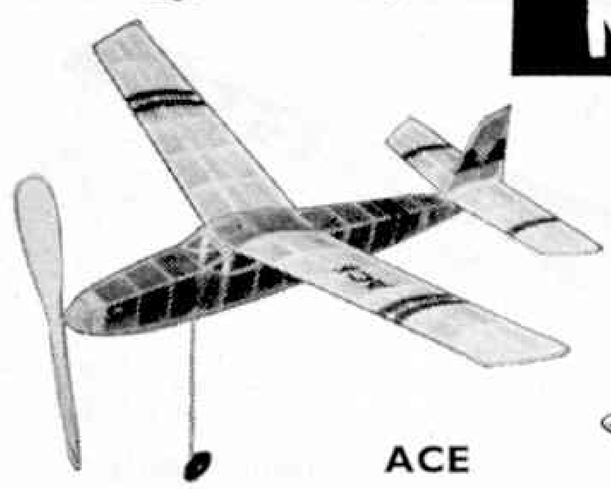

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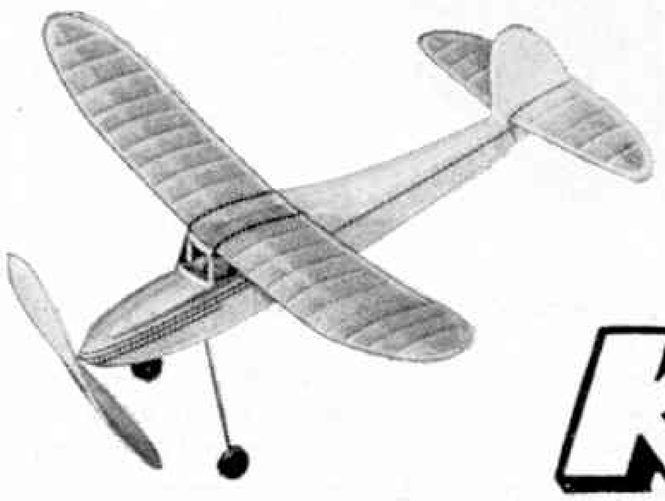

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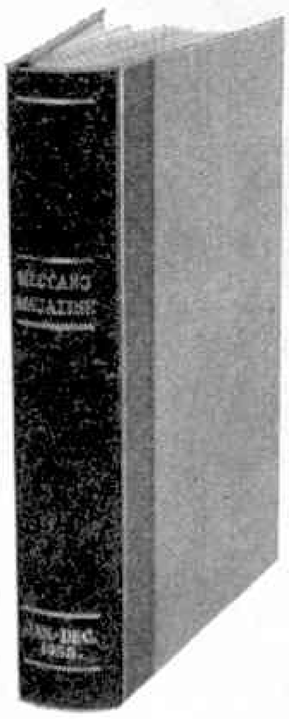

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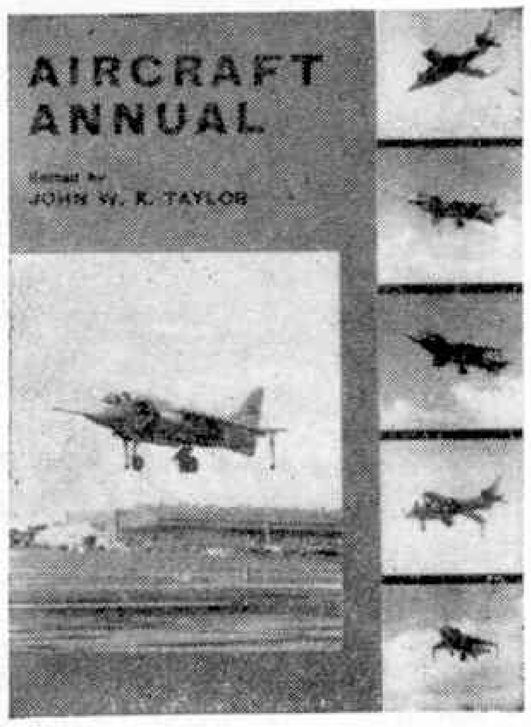
ANNUALS for 1964



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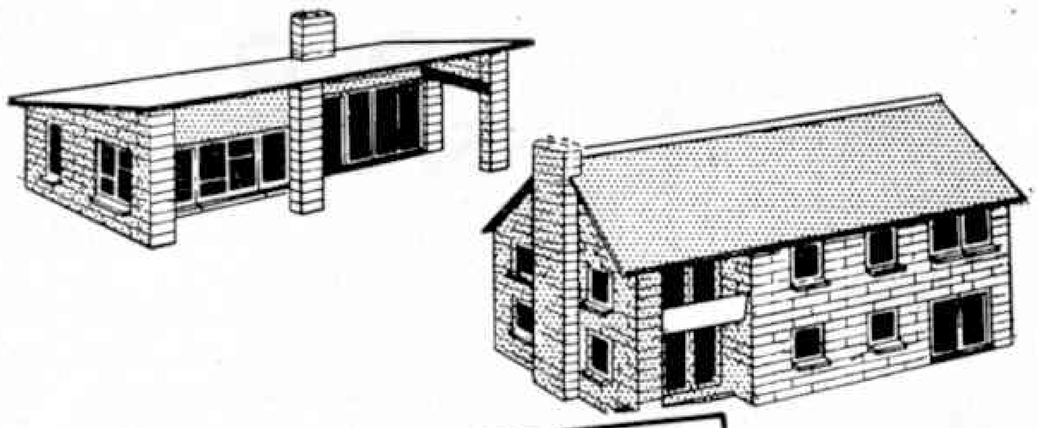

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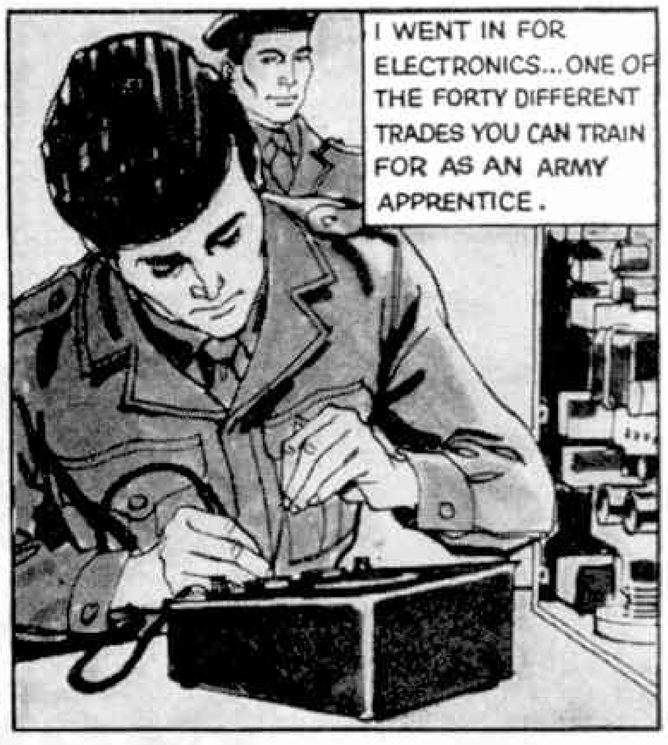

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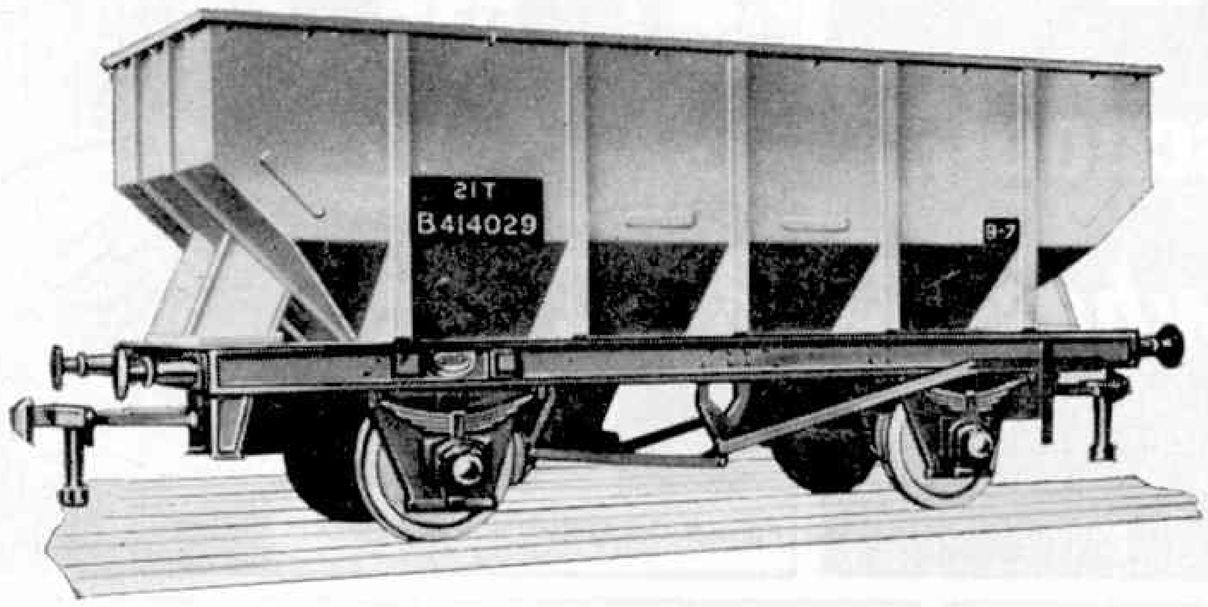

A finely detailed new item of rolling stock, this 21-ton Hopper Wagon has the characteristic sloping interior to take away the load of coal, ore or rock. Finished with grey body and standard black underframe this type of wagon is often made up in complete trains.
Length 4¼ in. (108 m.m.)

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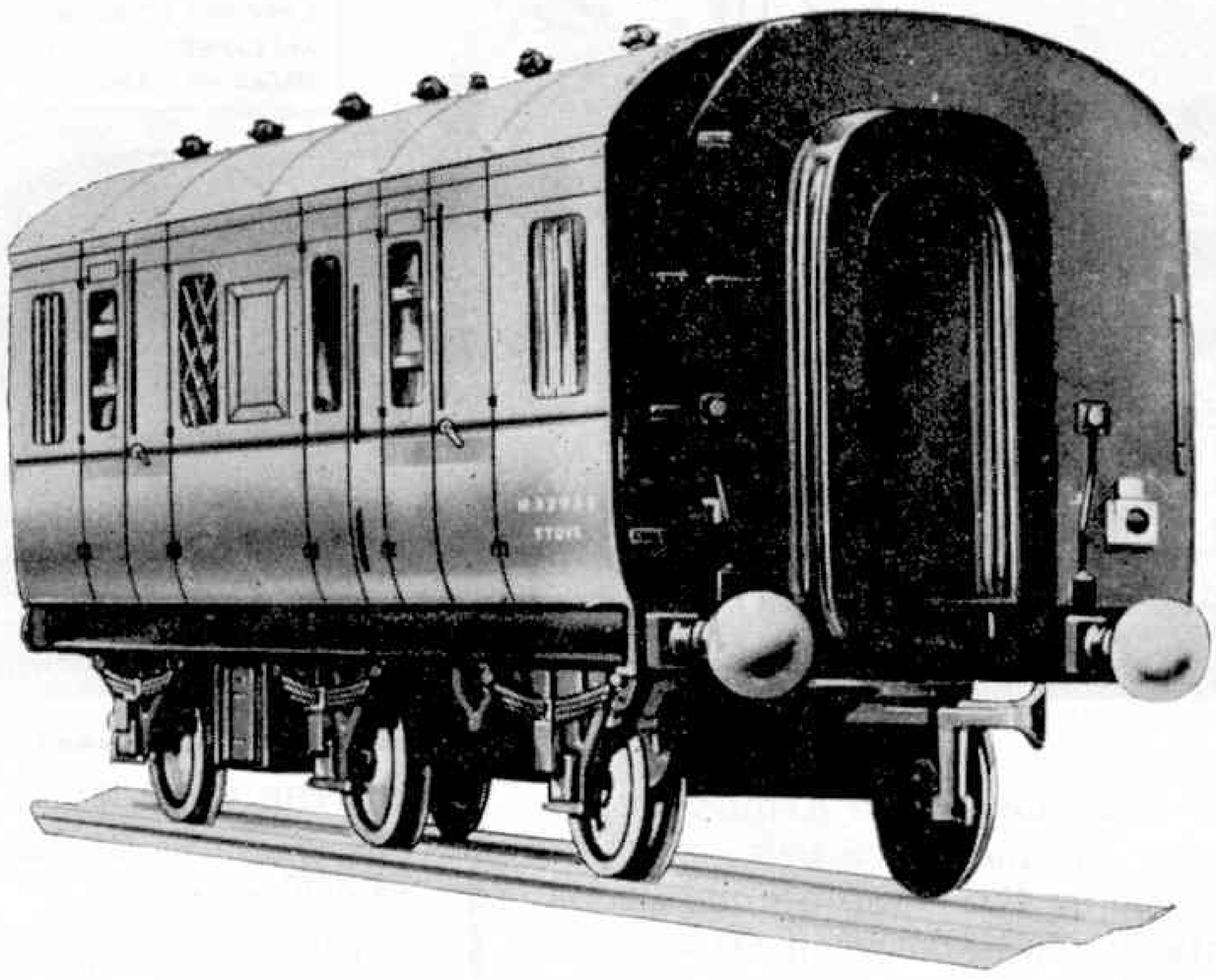

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MECCANO MAGAZINE

Volume XLVIII **No. 10** **October 1963**

LIVERPOOL is rightly proud of its many industries, and our picture this month comes from one of the huge new plants now appearing on the outskirts of the city—the Halewood factory of the Ford Motor Company. This is the biggest factory at present being built by any British car manufacturer and is Merseyside's largest industrial development. I visited Halewood recently, by invitation, to look around this immense concern and to see a new model which is being developed there. I am sure many readers would like to have details of this huge plant at their fingertips, so to speak, and so I give the following facts as an indication of the complexity of a project which has cost £30,000,000.

The Halewood plant will be capable of manufacturing 1,000 cars a day when in full production, and the staff will total 9,000. The site occupies 346 acres—which is almost as big as the adjacent Liverpool Airport—and of this 252 acres are being developed at the present time. Fifty acres of the factory are under one roof, which is equal to an area occupied by 400 corporation houses with gardens, and in full production the factory will use as much electricity as a medium-sized city.

Carrying the comparisons a little further, the 100 ft. water tower, which is a striking feature of the whole plant, holds 400,000 gallons, or six times as much water as you will find in the average municipal swimming pool. Railway readers in particular will be interested to know that there are four miles of internal railways within the factory area. To add to the record, there are ten miles of production conveyors, and the paint ovens cover one mile. In the make-up of the complete factory 300,000 tons of concrete will be used.

In different vein, many people have written to congratulate us on our latest addition to the Meccano range—Elektrikit. May I point out that in some Outfits brass Bush Wheels (Part No. 24A) have been included whereas they should, for the purposes of Elektrikit, be of steel. If any reader who finds this to be the case with his own Set will please let us know (enclosing a self-addressed envelope and marking it "M.E.") we will forward him steel Bush Wheels to replace the others. **THE EDITOR**

Next Month: THE WORLD'S OLDEST RAILWAY

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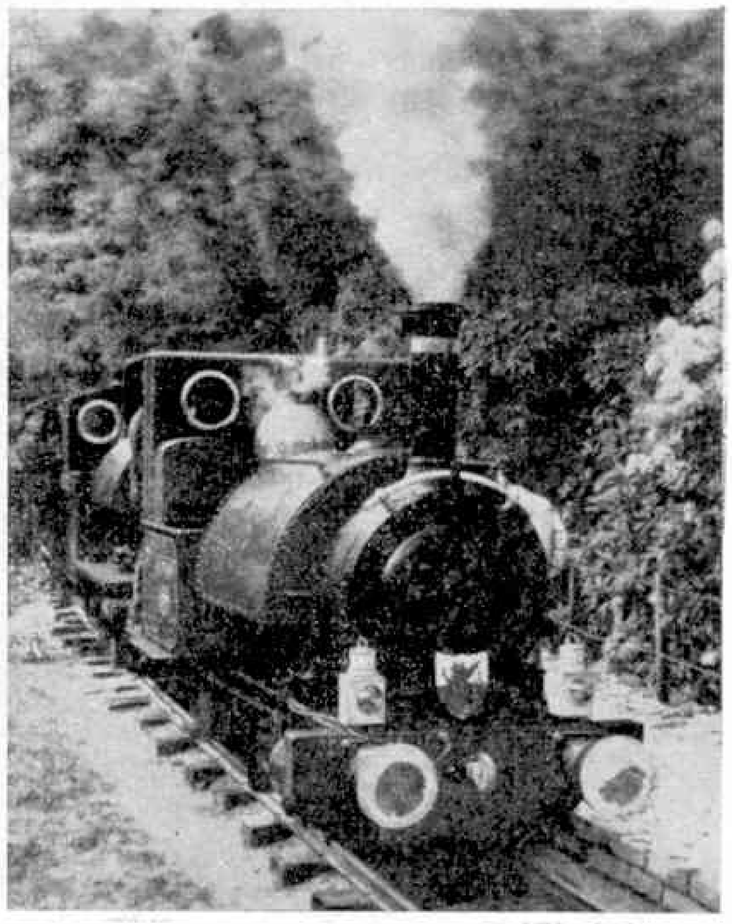
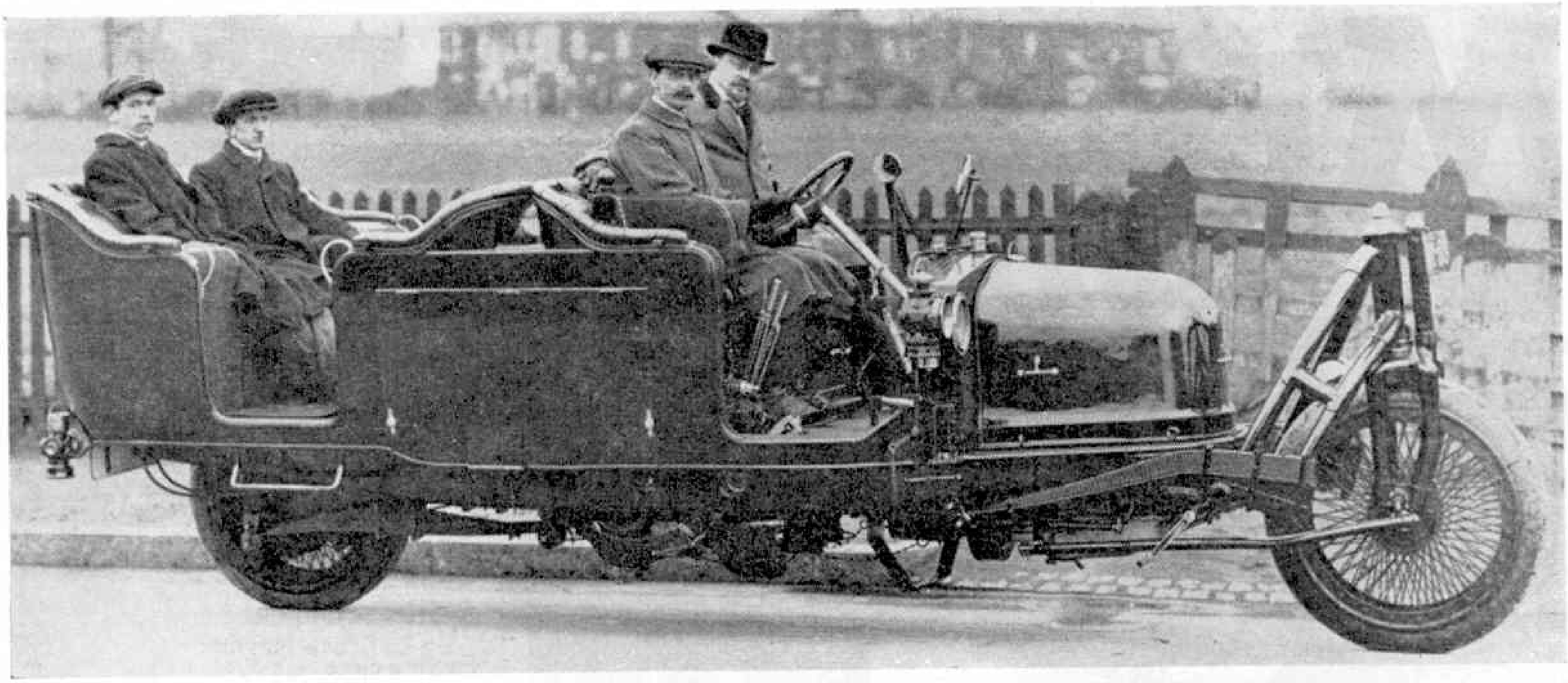
OUR FRONT COVER

The subject of this month's cover is No. 1 "Talyllyn," one of the two original engines built for the Talyllyn Railway, a 2 ft. 3 in. gauge system famous as the first to be run successfully by a preservation society. This engine and its sister, the recently-overhauled No. 2 "Dolgoch," have together handled the traffic on the railway for 86 years, as is recounted in this month's "Trackside News". The cover, from a transparency by John Adams, well illustrates the smart appearance which is characteristic of Talyllyn locomotives. No doubt the veterans Nos. 1 and 2 will continue to render yeoman service on this popular narrow-gauge line for many seasons to come.





The Gyrocar on the road—a final test run before it was transported to London for a public demonstration in April 1914. Count Peter Schilowsky, the inventor, is seen by the side of the driver.

HIS EXCELLENCY'S STRANGE INVENTION

The Wolseley Gyrocar

By TERRY CLEMENTS

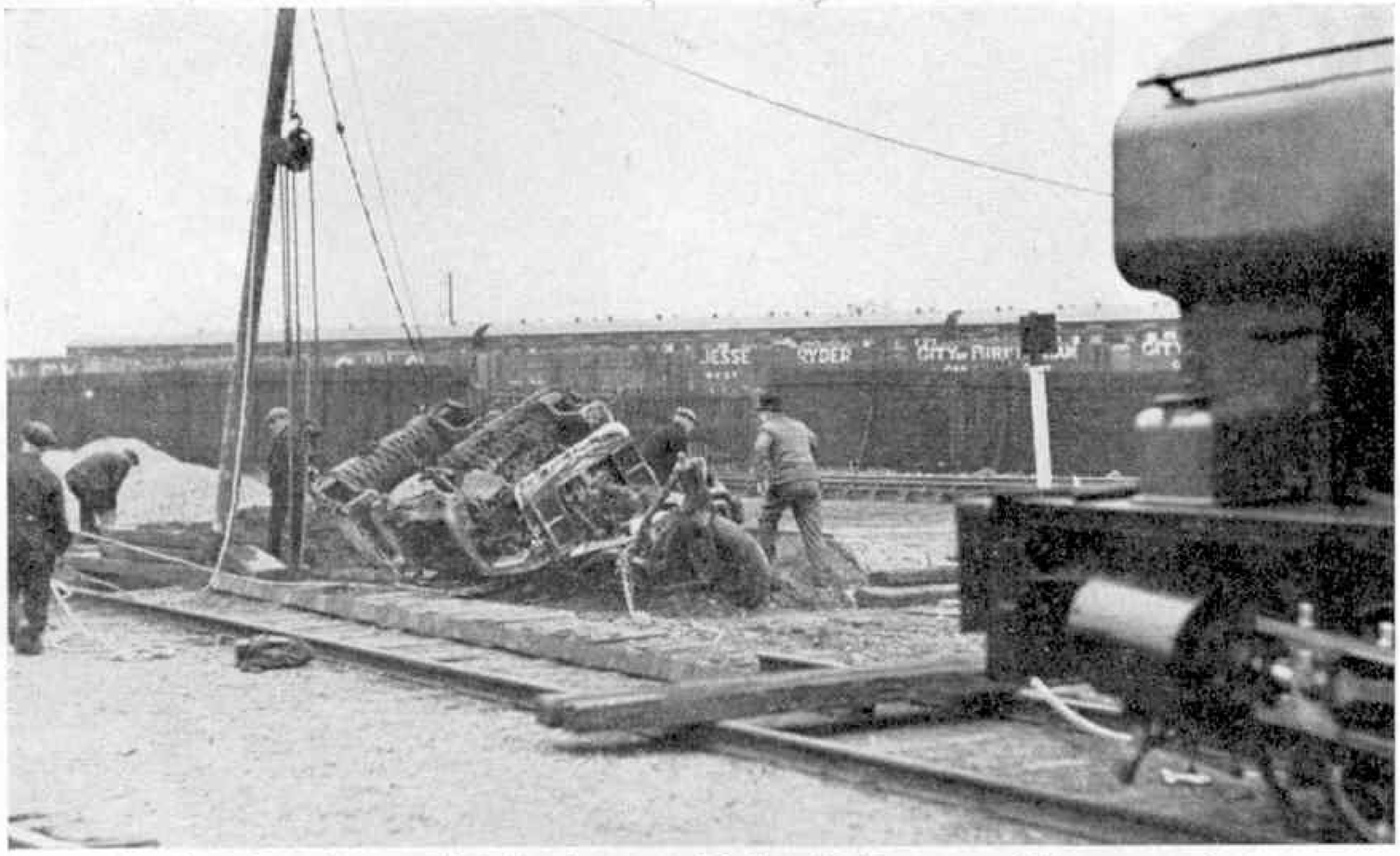
ONE warm evening in April 1914, six impeccably-dressed gentlemen stepped into their car in Regent's Park, London, and set off to make motoring history. The occasion was the first public outing of the Wolseley Gyrocar, the world's first, and to date only, successful two-wheeled automobile.

The story of the strangest car ever built by the British motor car industry began two years earlier, in 1912, when His Excellency Count Peter Schilowsky, a lawyer and member of the Russian Royal Family, commissioned the Wolseley Tool and Motor Car Company, one of the oldest and most famous of British vehicle manufacturers, to produce a two-wheeled car to his own design. Such a vehicle, the count claimed, would be of immense military value in that it would be able to travel across terrain too difficult for conventional motors and yet be able to reach a higher speed with a lighter body and less powerful engine than a normal four-wheeler.

Resurrecting the decayed remains of the Wolseley Gyrocar in 1938.

The plans that the count unrolled in front of the startled Wolseley engineers showed a cumbersome six-seat open body slung between two wheels in tandem, as in an ordinary bicycle. The front and central pairs of seats were separated by a locker that contained a patented gyroscopic mechanism to keep the car on an even keel. The gyroscope, which was driven at between 2,000 and 3,000 r.p.m. by a 1.25 h.p. electric motor, resisted the overturning movements of the car through a rack and pinion system which was connected to an ingenious but frail-looking arrangement of two pendulums and two cords. Sprags on each side of the car were automatically lowered whenever the gyroscope was stopped.

Motive power was supplied by a Wolseley–Vickers car engine mounted at the front of the car, ahead of the radiator, and driving the back wheel through a conventional gearbox and clutch. A



Part of a railway track had to be removed before the Gyrocar could be excavated.

transmission brake was mounted behind the gearbox—as far as is known there were no brakes on the wheels.

In spite of the Heath–Robinson look of his invention, the count must have impressed the Wolseley engineers, for his strange order was accepted. Work began almost at once and went ahead on a trial and error basis. Throughout the year that it took to build the chassis, the count was a frequent visitor to the Adderley Park, Birmingham, works and although he would never allow his aristocratic hands to touch a spanner or screwdriver he proved an efficient, if slightly eccentric, foreman.

On at least one occasion he declared a half-day holiday at his own expense for all members of the Wolseley experimental department, while on other occasions he would fling one of his gloves into a crowd of apprentices and reward the youth who returned it.

Eventually, the chassis was ready and a Wolseley test engineer took it for its first test run. This is the report he made:—

"On November 27th, 1913, I made an effort to move the car, which was successful, no derangement of the governing gear taking place. We drove the car backwards and forwards for a distance of about six feet many times. During these tests it was noticeable that one could stand on the side of the car and step into the body without any disturbance of balance. We then moved the car partially round a radius to the left, backwards and forwards. Eventually, we drove the car the whole length of the works, backwards and forwards, with four passengers. Then His Excellency decided to take the machine over on to the track, impressing on me that we must go very gently. We drove into the Arden Road, making two stops on the curve, and we had to reverse so that we should not use full lock. I then drove the car steadily up the Arden Road, going as slowly as possible and slipping the clutch in first gear all the time. We took a wide sweep into the Bordesley Green Road, and suddenly, when opposite the Directors' mess room, the vehicle heeled to the nearside and dropped on its sprag. It was lifted by eight men, the engine restarted, and the car driven back to the experimental department, but it was supported by outside assistance as His Excellency did not attempt to balance the car in the street."

The next five months from November 1913 were occupied in sorting out various teething troubles, building a body and fitting it to the chassis, and in redesigning the car's front suspension and steering gear to improve the cornering ability.

Then, on April 28, 1914, the Wolseley Gyrocar was publicly demonstrated for the first time before a large and interested crowd in Regent's Park, London. Throughout the next few weeks, the car and its designer were a familiar sight in the West End. Wherever they went, large crowds followed. However, the count always rode as a passenger alongside the driver and never took the wheel himself in public. In fact, it is not known whether he ever drove his own invention!

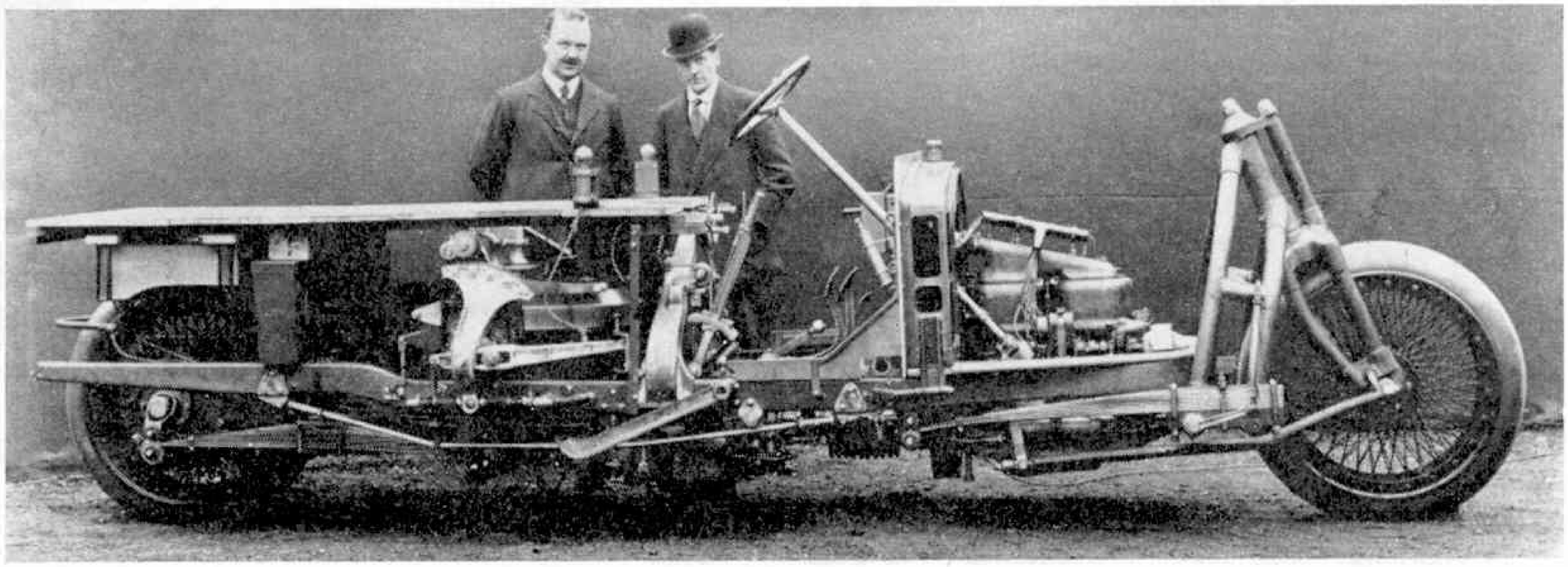
Satisfied with his achievement, Count Schilowsky paid off the company and made arrangements to ship the car to Russia where he intended to use it on his estates and also to demonstrate its military possibilities to the government. But the first world war intervened and he hurriedly returned home.

The Gyrocar lay neglected and rusting in a corner of the factory through the war and for some time afterwards, until the Directors of the company finally assumed that the inventor had been killed in the war or the Russian Revolution. Nevertheless, as long as there was the possibility of the count still being alive, they could not dispose of what they considered was a "white elephant". Therefore the car was buried.

It was quickly forgotten. In the early 'twenties there were more pressing problems to consider than the fate of an eccentric Russian; the company, whose quality-built cars had been used by

(*Continued on page 446*)

The chassis of the Wolseley Gyrocar, showing the gyroscope and rack and pinion mechanism in the centre of the vehicle. The pendulum balance weights are hidden by the chassis members. This photograph was taken shortly before the car's first test run in November 1913. The inventor is on the left.



A RARE RAILWAY SOUVENIR

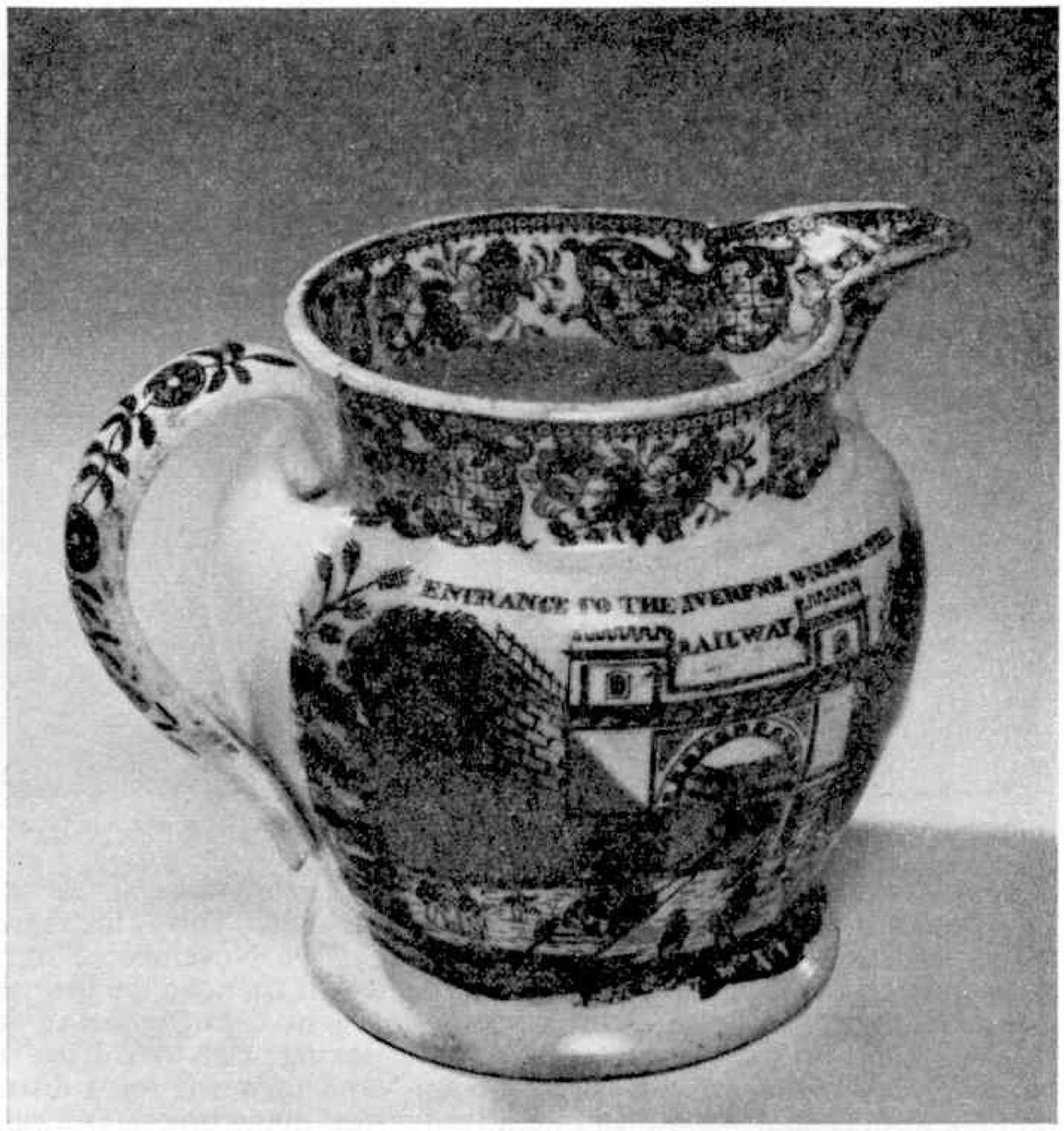
Jug Commemorates Event Over 100 Years Ago

By LESLIE NORMAN

IN the early days of railways, it was usual to mark the opening of a line with celebrations which were sometimes of considerable extent. Such openings were regarded as important events, especially in the localities served, and in those days, when such things as the Press or film camera were unknown, sketches, engravings or delicately coloured prints often recorded the event or illustrated a train.

In addition, medals, tokens of various kinds and especially-decorated linen, silk or pottery also formed souvenirs of such events. Items of this kind still exist, in museums, private collections, or elsewhere, and they are to be regarded as antiques of considerable interest. Many such treasures must have been housed in country mansions and similar establishments, passing from one generation to the next, and from time to time such items have no doubt been dispersed through the sale of the property and effects of their owners.

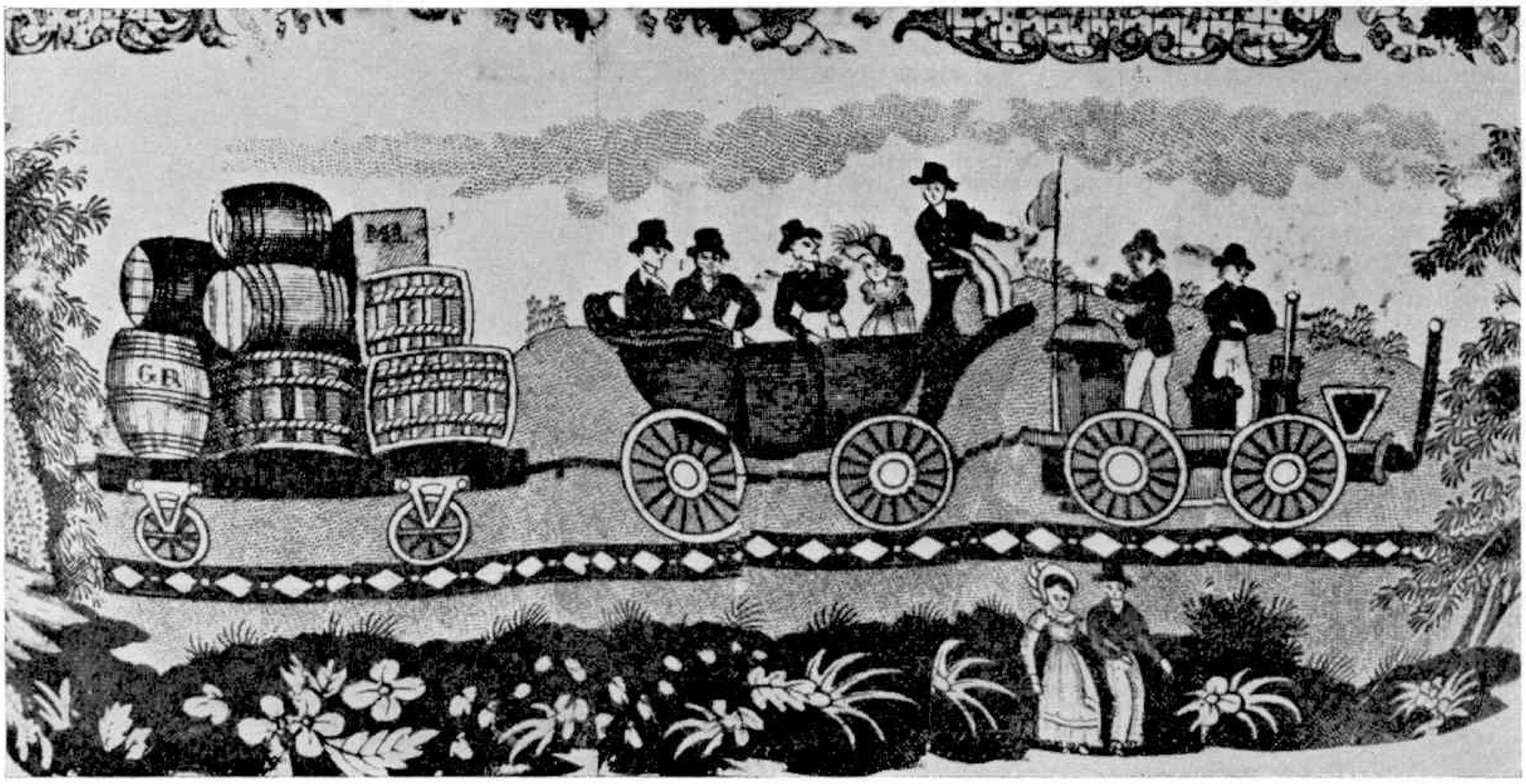
I am sure all *M.M.* readers will be interested in the souvenir jug shown in the picture at the top of this page, and I am indebted to Mrs. Una P. Hornby, one of the Directors of Meccano Limited, for permission to reproduce details of the jug here. The jug, which has been in Mrs. Hornby's possession for some time, clearly appears to have been produced as a souvenir of the opening of the Liverpool and Manchester Railway in 1830.



The ornamental railway souvenir jug described in this article.

This fascinating piece is a fine example of potter's craft and artist's skill. In addition to intricate decoration of a floral

A composite view of part of the decoration showing a train drawn by the locomotive "Novelty".



The Moorish Arch and its immediate surroundings at Edge Hill, Liverpool, form the setting for the departing train shown in this artist's impression.

character there is on one side—which you see in our first picture—a view with the inscription *Entrance to the Liverpool & Manchester Railway*, and an enlargement of this appears on this page. It is evidently intended to show, with a certain amount of licence perhaps, the ornamental Moorish Arch and its immediate surroundings at Edge Hill, Liverpool. The arch used to span the track near what was known as Wapping Cutting, where steam locomotives were attached to outgoing trains. The trains were hauled by cable to Wapping Cutting through a short tunnel from their starting point at Crown Street Station, the Company's first Liverpool passenger terminus.

The tunnel face visible through the arch is no doubt intended to represent the openings of Crown Street tunnel, and of the Wapping tunnel, which led down a steep gradient to Wapping Goods Depot. So, as we are looking inward in the direction of Liverpool, rather than outward to Manchester, the use of the word "entrance" may at first seem rather curious. This may possibly be explained by the fact that although Crown Street Station formed the starting point of the special trains on the opening day, September 15, 1830, the station was not generally used for passengers until the following December. During the first few months, therefore, the Moorish Arch was the place of entraining and there were, cut in the stone cutting walls, steps leading down from street level on both sides of the line.

So, for a time at least—from the passengers' point of view—the entrance to the railway was at the point shown in the picture. Furthermore, one of a well-known series of hand-coloured aquatints of Liverpool and Manchester Railway scenes, published in 1831, showing Wapping Cutting and the faces of the Crown Street and Wapping tunnels and apparently sketched from beneath the Moorish Arch, is entitled *Entrance of the railway at Edge Hill, Liverpool.* This shows the lower flights of the stairways and these were doubtless used by folk such as those who are shown in our picture disporting themselves about the Company's property. On the whole, therefore, we may consider that the artist responsible for the impression and inscription was justified.

The arch itself connected the engine houses in which were placed the stationary winding engines for working the cables on the Wapping and Crown Street sections. There were, in fact, three tunnel mouths at the face depicted, although only two are visible in the picture. This may be due to the angle at which the artist viewed his subject.

On the opposite side of the jug from the view in question is a representation of a train and this I am able to show you as a complete item in a horizontal plane as the result of clever photography. Owing to the length of the train and the curved surface of the jug, it would not have been possible to represent the whole train to readers in a single view. So several photographs were taken from different angles, and the resultant prints trimmed in such a way that, placed together, they provide the view you see on the previous page.

An interesting point about the train is that the engine at its head is clearly not of the same steam locomotive family as the *Rocket*, or *Planet* type, to mention only two of the better-known Stephenson engines of the early days. But it does appear to represent one of the competitors at the famous Rainhill locomotive contest of 1829—an ingenious machine bearing the name *Novelty*, entered by Braithwaite and Ericsson. This locomotive showed its paces at Rainhill, but as it had been hurriedly built it was soon out of order. *Novelty* was withdrawn from the contest, but it is on record that it was used experimentally by Ericsson after the Rainhill trials, so the train shown may possibly have been sketched during these trips.

Novelty had been a popular entrant at Rainhill and was warmly regarded by Charles Blacker Vignoles, an engineer of distinction who, in fact, made one of several surveys carried out when the line was still in the projected stage, and who was with George Stephenson for a time during the construction. In his diary is recorded the fact that the engine was still in existence in 1838. Indeed, in that year, in the course of an inspection trip as Engineer of the North Union Railway, *Novelty* was the engine which took him across the new Ribble viaduct. One of the vertical cylinders of *Novelty* is still preserved.

The vehicles composing the train are of interest in several respects, but whether the assembly shown represents reality is uncertain. The body of the vehicle in which the passengers are riding is practically that of a horse-drawn road carriage, even to the high box seat on which the coachman would sit. In the picture, however, it looks as though one of the party is occupying the seat and, to judge by his attitude, may be making a sort of running commentary on the trip for the benefit of the others. The passenger vehicle is followed by a flat or, perhaps, low-sided wagon, on which are precariously piled various casks, barrels, and at least one bale.

It is interesting that a drawing by Vignoles showing a train of different make-up, but with the *Novelty* locomotive at its head appeared in a book by his son *Life of C. B. Vignoles*, published in London in 1889. A more recent reproduction of this second train, again with *Novelty* but with slight differences in detail from the Vignoles drawing, was included

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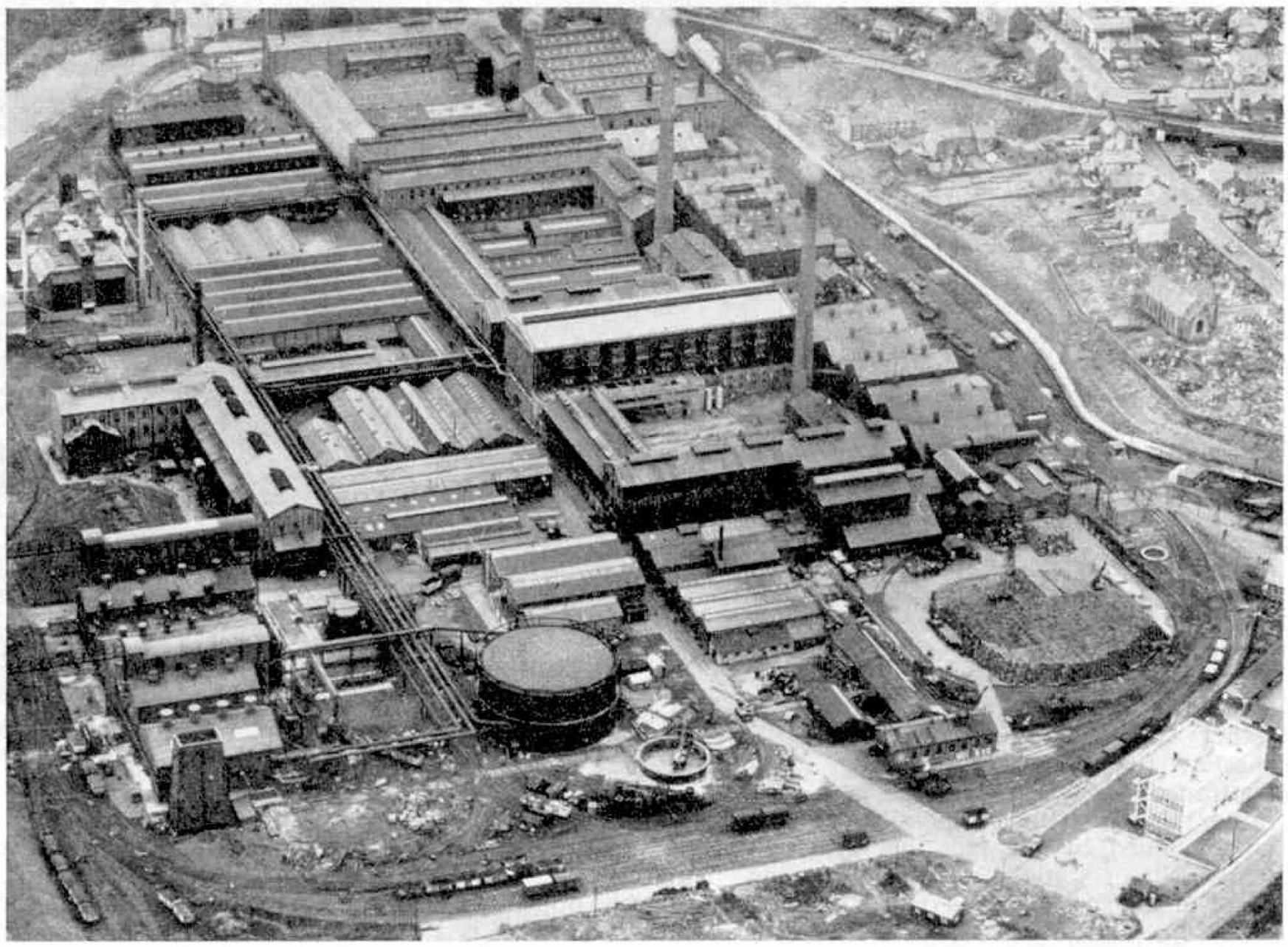
L. Bruce Mayne Tells The Story Of

DEVIL'S COPPER



Right: An aerial view of the refinery of the International Nickel Co. Ltd., at Clydach, near Swansea. The refinery was built in 1902. Material transported across the Atlantic is handled here.

HAVE you ever asked yourself what puts the "stainless" into stainless steel, or the heat resistance into an electric fire's element, or the "N" into E.P.N.S.? The answer is nickel, once the bane of the copper smelter and now the helpmate in a thousand different ways of industry and commerce. Scientists estimate that there is twice as much nickel in the earth's crust as there is copper, zinc and lead combined. It is found all over the world from Cuba to the Celebes, but the premier place in nickel production belongs to Canada.

Natural alloys containing nickel were used in ancient times, but early miners in Saxony, who had discovered what they believed to be copper ore, found the metal they obtained was not copper. It was hard and could not be hammered into shape. They believed the Devil had cast a spell on their ore and named the new metal "Kupfer-Nickel"—Old Nick's Copper.

After five years of experimenting, a Swedish scientist named Cronstedt concluded that kupfer-nickel was an entirely new metal, which he named Nickel. Although it was Cronstedt, about 200 years ago, who "discovered" nickel scientifically, a nickel-iron alloy, perhaps from a meteorite, had provided the "heaven-sent" swords of famous warriors of olden times. Also, paktong, a white metal from which the Chinese had been making beautiful boxes and candlesticks for centuries, proved to be an alloy of copper, nickel and zinc. Similar alloys came to be manufactured in Europe under the name German Silver, later called nickel-silver.

In 1844, electro-plating was introduced into Britain and articles made of German silver were plated with real silver. Only small quantities of nickel were being mined in the world and until the end of the nineteenth century nickel plating, nickel-silver, silver-plated ware and coinage were the chief uses to which the metal was put.

Samuel J. Ritchie purchased a number of copper mines at Sudbury, 50 miles from the shore of Lake Huron in Ontario, Canada, but when mining operations began in 1886 the copper ore was found to contain that old Devil's Copper again. But nickel was selling at almost ten times the price of copper, so R. M. Thompson, manager of the smeltery where Ritchie's ore had been sent, determined to find a method of separating the nickel from the copper.

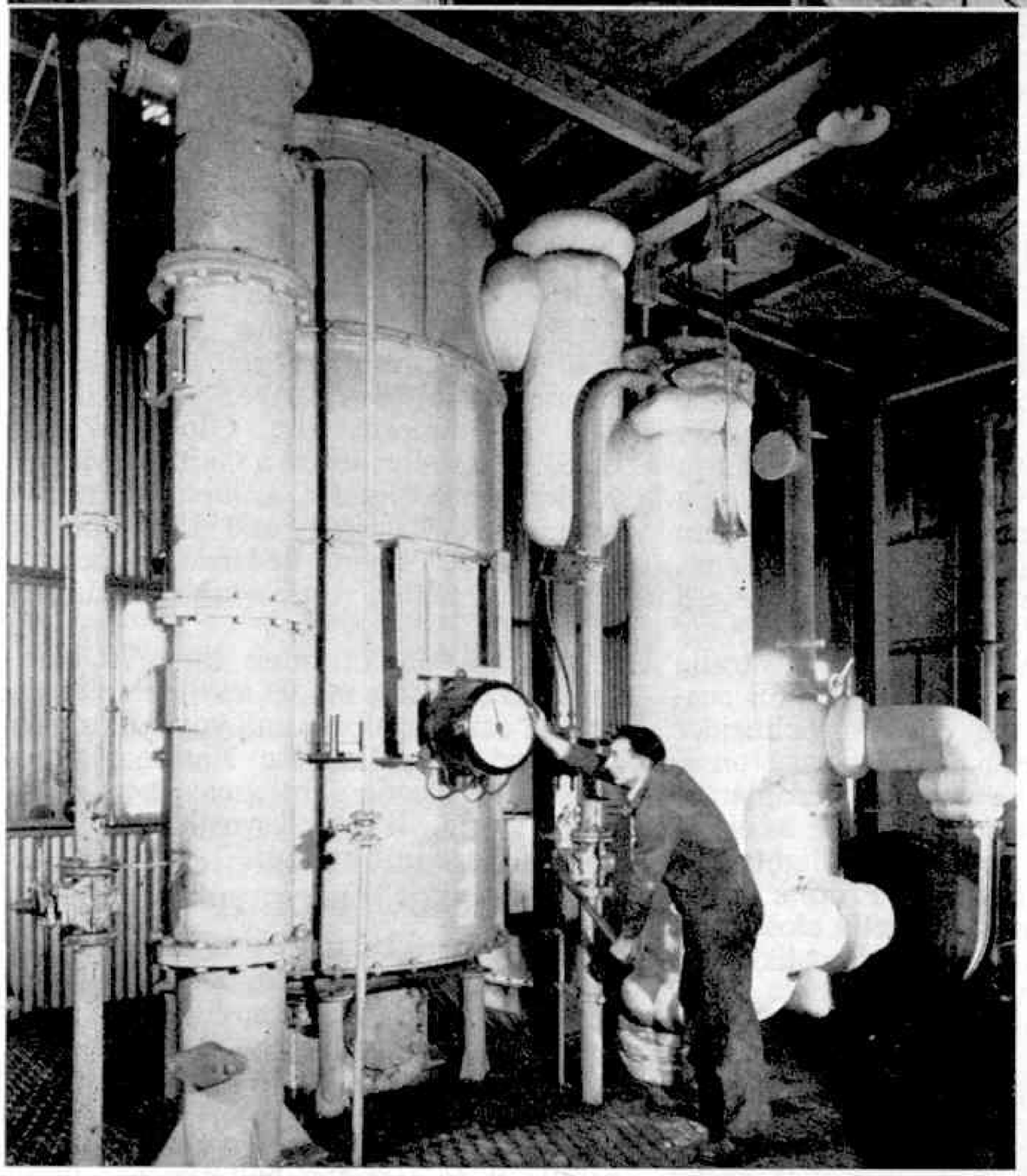
* * * *

After much experimenting, Thompson discovered that by mixing sodium sulphate with the partially-refined nickel-copper ore, he could separate the nickel from the copper. When the molten metal was poured into pots and cooled, the bottom part was largely nickel sulphide and the top largely copper sulphide. And so the Orford process named after Thompson's company, the Orford Copper and Nickel Co., was born.

Efforts were now being made to interest various governments and manufacturers in the uses of nickel-steel. In the 1890's, after experiments which showed that nickel-steel plating was far superior to plain steel plates as armour, the great navies of the world began to take a keen interest in nickel-steel.

The total output of nickel in 1887 had been only 2,000 tons, but by 1902 Canada alone was producing 5,000 tons a year. It was then that Ritchie's company and Thompson's, with others, combined to form the International Nickel Company.

In the 1880's, while Thompson and Ritchie were working on more efficient methods of refining nickel in Canada, Dr.



Above: The decomposer aisle at the Clydach refinery makes an impressive picture.

Left: Another view from Clydach — one of the reducers, showing heating unit and gas circulation plant. Preheated hydrogen is driven through the heated mass of the ore to remove the oxygen from the iron oxide.

Ludwig Mond was investigating a mysterious black crust which formed on valves at his chlorine plant at Winnington, Cheshire. Painstakingly, Mond and his associates closely studied the action of carbon monoxide on nickel. The gas was passed over hot, finely-divided nickel, the outflow gas being burned at the tube end. The experiment was started each morning and shut down each night, the nickel being allowed to cool off in the stream of carbon monoxide. One evening, a cold porcelain tile was held in the flame and a metallic deposit formed. It was nickel tetracarbonyl which decomposed to nickel and carbon monoxide at temperatures above 150 degrees Centigrade.

Mond offered his discoveries to the International Nickel Company but when they rejected them he bought some mines of his own in Sudbury. Smelting facilities were set up there and the "carbonyl" nickel refinery at Clydach, near Swansea, was built in 1902.

In the early years, the "Mond" nickel matte which arrived at Clydach had a high copper content. But in 1934—the Mond Company and the International Nickel Company had merged in 1929—low copper nickel-sulphide, produced by the Orford process, was used.

During the first world war, stronger and tougher steels were demanded and a new interest in nickel was created. However, immediately after the war, nickel fell on bad times and a research programme to find new markets and uses for the mineral was set in motion. New machines, products and appliances, as they were invented, required better raw materials—nickel alloys provided many of the answers, particularly in the motor car industry. By 1929 more nickel was being used in industry than at the peak of wartime production. World War II created even greater demands for nickel and the industry is still expanding.

From the Sudbury mines, the nickel ore is crushed and ground as fine as flour. In long rows of flotation tanks the mineral particles are separated into three types of concentrates. The first of these is primarily copper, the second contains the bulk of the nickel, with some copper, and the third is mainly iron, with some nickel. In the huge smelting plant, the nickel concentrate is roasted in furnaces, to remove a large percentage of the sulphur, and then melted in reverberatory furnaces. While still in a molten state, it is conveyed to the convertors where sand or quartz is added and air is blown into the mixture to remove still more sulphur and the bulk of the remaining iron.

The remaining nickel sulphide and copper sulphide are separated by a slow-cooling process, which replaced the Orford process a few years ago. The nickel sulphide is crushed and ground, then passed to a fluid bed roasting plant, where it is converted to particles of nickel oxide. This is the stuff which is transported across the Atlantic to Clydach.

In cylindrical, multi-hearth reducing towers, into which water-gas is passed, the nickel oxide is changed into impure nickel powder at a temperature of 400 degrees C. These reducing towers are gas-tight, iron cylinders with a number of overlapping shelves stepped down inside. Through gas-tight valves the nickel oxide is fed continuously and is worked down the tower by rabble arms.

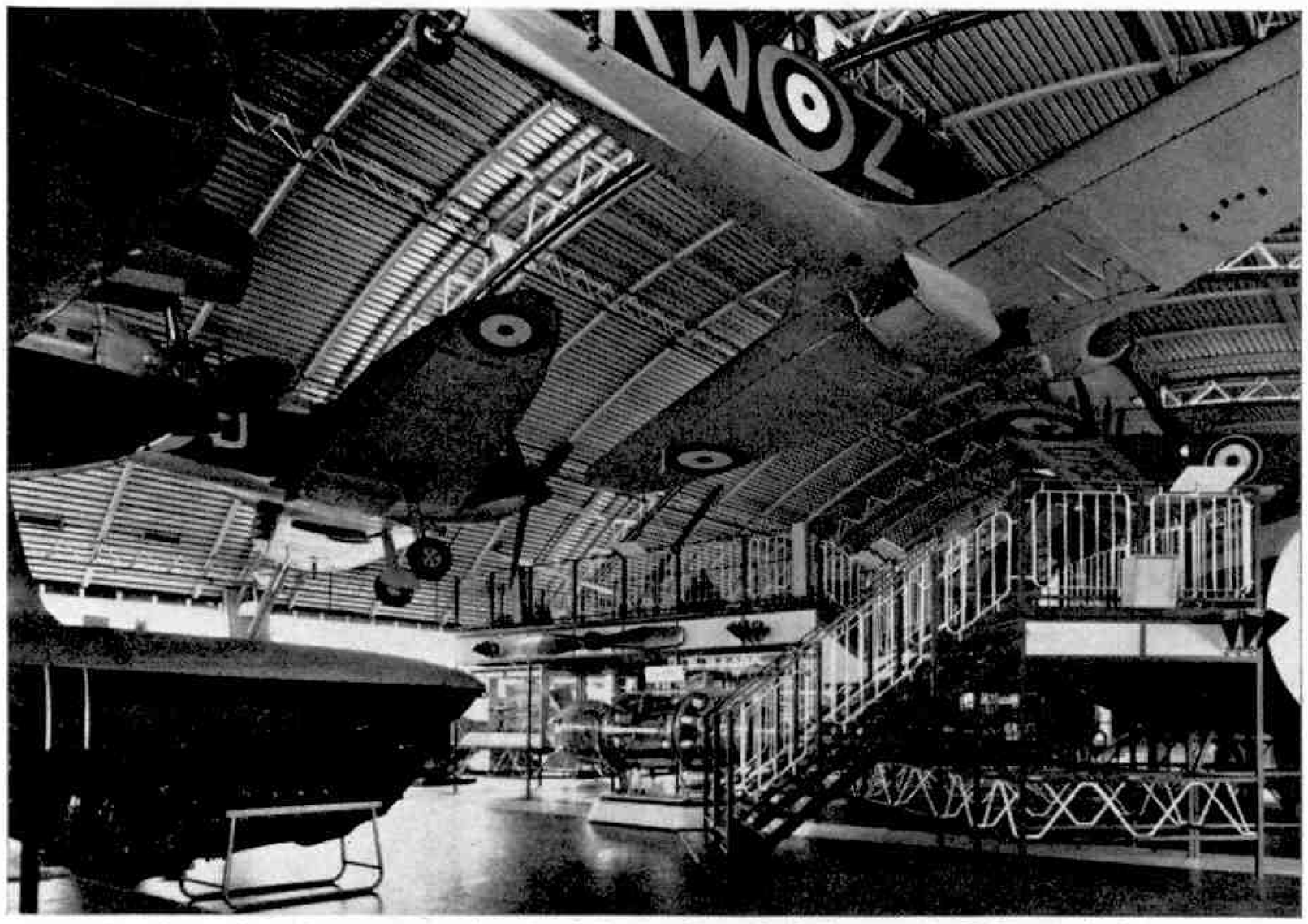
The impure nickel powder is fed into volatilising towers through gas-tight valves at the top. At a temperature of 50 degrees C. the carbon monoxide, which is fed into the tower from the bottom, is passed over the nickel powder. The gas which is drawn off at the top is carbon monoxide containing about 8 per cent. nickel carbonyl, which has to be broken down again. In the decomposing towers, the gas containing nickel carbonyl flows upwards over descending pellets of nickel, the towers having been initially "seeded" with pure nickel powder. Gradually the pellets, which have been pre-heated before being passed through the stream of gas, increase in size as they fall to the bottom of the reaction chamber. Here, they are collected and returned to the top of the pre-heater where the oversize pellets are removed. The mass of pellets is passed continuously

(*Continued on page 446*)

AIR NEWS

By John W. R. Taylor

THE WORLD'S GREATEST AIR SHOW



Our picture shows the entrance stair to the elevated walkway in the Aeronautics Gallery at the Science Museum, London. In the foreground can be seen the Supermarine S.6B Schneider Trophy seaplane, a Spitfire and a Hurricane.

THE greatest air show in the world opened in London on July 11 this year. You can go to see it any day of the week, including Sundays, and it doesn't cost you a penny. It is also a great deal quieter and less nerve-shattering than most modern air shows, because all the aircraft and aero-engines on display have come to the end of their flying life and now form part of the National Aeronautical Collection in the Science Museum.

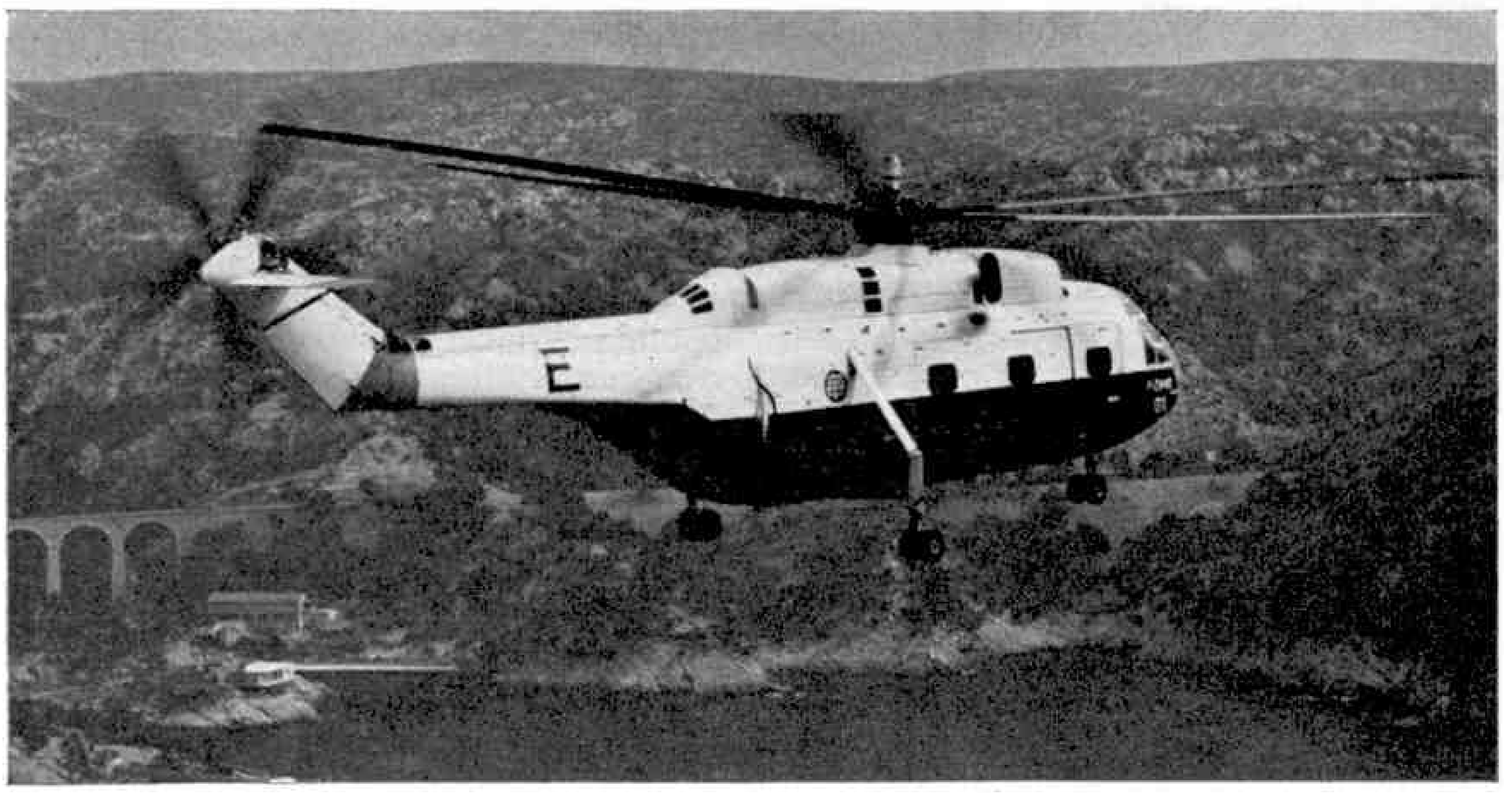
Some people think museums are dreary, dusty old places, full of fossils and broken relics of the past. A glance at the picture at the top of this page will suffice to show that this is far from true of the new Aeronautics Gallery at South Kensington. The building itself is modern, with a 75-yard-long, clear-span metal roof, and all the exhibits look as fresh as if they had just come from the factory.

More than twenty full-size aircraft are on view, including some of the greatest machines in flying history. In the space of a few minutes, the visitor can inspect the little paper-covered triplane in which A. V. Roe made the first flight with an all-British aeroplane in 1909, the Vimy in which Alcock and Brown became the first men to fly the Atlantic non-stop ten years later, the tiny Moth in which a young girl named Amy Johnson, fresh from flying school, flew across the world to Australia in 1930, and the Supermarine S.6B seaplane that won the coveted Schneider Trophy for Britain.

All these are the original aeroplanes, smartened up but still forming a direct link with some of the greatest flights and bravest people of all time. From a raised walkway, it is possible to get a close look also at famous fighter-planes like the S.E.5a and Fokker Monoplane of World War I and the immortal Spitfire and Hurricane of World War II. Britain's first jet aircraft, the Gloster-Whittle E.28/39, is there; so are a German Me.163 tail-less rocket-fighter, a Japanese Kamikaze suicide aircraft and the fantastic Rolls-Royce "Flying Bedstead", ancestor of all the exciting vertical take-off aircraft of today.

Add to this lot more than 70 aero-engines, 200 scale model aeroplanes and a host of other exhibits, and you will understand why I called the National Aeronautical Collection the greatest air show in the world. It is well worth a visit next time you are in London.

The Super Frelon—the world's fastest helicopter.



U.S.A.F. MADE IT RAIN

We have more than our fair share of rain in Britain, and it is difficult to imagine a place where they have so little that it has to be produced artificially. One such spot, not long ago, was the Mojave Desert of California, where the U.S.A.F. waited in vain for the kind of downpour that would enable it to test the bad-weather flying capabilities of the Northrop T–38A Talon supersonic training aircraft.

In the end, the test pilots had to make their own rain. They filled a Boeing KC–135 jet tanker with thousands of gallons of water and sent it up over the desert to wait for the T–38A. As the little jet trainer approached it from behind, the tanker's crew released a torrent of water through the boom which is normally used to transfer fuel during in-flight refuelling operations. Flying a few hundred feet to the rear, the T–38A received a good soaking, without any apparent after-effects. So everybody was satisfied.

FRELON FLIES FAST

The prototype of Sud-Aviation's big Super Frelon helicopter has set up a remarkable series of speed records which have proved it to be the fastest helicopter in the world. Piloted by Jean Boulet and Roland Coffignot, it first streaked over a 3 km low-altitude course at an average speed of 212 m.p.h.; then over a 15/25 km high-altitude course it averaged 217.66 m.p.h. Finally, it raced around a 100 km (62 mile) closed circuit at 207.5 m.p.h.

Powered by three 1,320 s.h.p. Turbomeca Turmo IIIC shaft-turbines, the Super Frelon is designed to carry 27–30 troops, eighteen stretchers and a medical attendant, or up to four and a half tons of freight. It has a boat-type hull to make possible emergency operation from water, and a rear loading ramp for vehicles and freight. Its rotor system was developed and built in America by Sikorsky, and the Fiat Company built its main gearcase and transmission in Italy.

So far, only two prototypes and four pre-production Super Frelons have been ordered, but there seems little doubt that this helicopter will go into large-scale production for the French Air Force. The French Navy is also interested in an anti-submarine version, able to operate by day and night, carrying a heavy load of submarine search equipment and weapons.

The International Air Transport Association produced some rather remarkable statistics recently to show how important it is to keep aeroplanes clean now that they fly so fast.

Tests have shown that if the exterior of a jet airliner is dirty, the extra effort required to push it through the air can cost 1½ lb. of fuel for every mile it flies. On a flight from New York to Rome, this would represent an increase in fuel consumption of almost 1,000 gallons, which is more than the average motorist uses in two years.

"M.M." readers will be interested in this fine new picture of the Handley Page Dart Herald airliner recently delivered to the Swiss Company Globe Air. Below: The Shin Meiwa UF-XS experimental flying boat. Photograph by courtesy of AiReview, Tokio.

PROBLEM CARGO

A giant British-built magnet presented B.O.A.C. with quite a problem this summer, when the airline was asked to fly it from London Airport to Boston. Nobody knew what effect the 1,700 lb. magnet might have on the aircraft's navigational aids, and particularly its compasses.

After it had been packed aboard one of B.O.A.C.'s DC–7Fs, the compasses were checked for error. However, there was no guarantee that the compasses would react in flight in precisely the same way as they did on the ground. So, as a safety precaution, two navigators were carried. Their task during the flight was to plot the course every fifteen minutes. Apart from keeping the aircraft to its flight path, this showed the degree of error that might be expected if B.O.A.C. were ever asked to repeat the operation.

All went well and the magnet—a proton resonance magnet to give it its full name—is now at Harvard University where it will be used for research into the magnetic properties of atomic particles.

SPOTTERS' NIGHTMARE

One of the favourite tricks of people who teach aircraft recognition has always been to stick together pieces cut from silhouette drawings of several different aircraft to make up one strange-looking "rare bird", and then ask their unfortunate pupils to name the types from which the bits and pieces came.

The aircraft shown in the picture above looks rather as if it was designed in this way. Known as the UF–XS, it is a research flying-boat built by the Japanese Shin Meiwa Company. "Built" is perhaps the wrong word, for it began life as a neat, twin-engined Grumman Albatross amphibian. As a start, the hull was rebuilt with a deeper after-body, longer nose and other changes. New tail surfaces were fitted, with the tailplane attached to the tip of the fin. Two 600 h.p. Pratt & Whitney R–1340 radial engines were added outboard of the normal 1,425 h.p. Wright R–1820s, and two 1,000 s.h.p. General Electric T58 turbines were installed in a humped fairing to the rear of the flight deck to operate a boundary-layer control system. Finally, large leading-edge slats were fitted to the wings.

In its new form, the aircraft is a flying scale model of a medium-range flying-boat which Shin Meiwa is hoping to build for the Japanese Defence Agency.

PARATROOPS BY PALLET!

If trials now being conducted by the U.S.A.F. Tactical Air Command are successful, it may be possible to drop fully-equipped troops from a moving aeroplane without parachutes, in future.

The troops to be air-delivered sit in "people pallets" holding 12, 24 and 48 men and the pallets are then loaded into the freight hold of a Lockheed C–130 Hercules assault transport aircraft. At the place selected for the drop, the C–130 flies over the ground at a height of up to 35 feet and at speeds between 115 and 159 m.p.h. It trails a hook which is attached to the pallet just inside the open cargo ramp at the rear of the aircraft. The hook engages a steel cable on the ground and this pulls the pallet out of the aircraft, which flies on.

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CYCLING THROUGH THE GATEWAY TO NORMANDY

By ALAN H. GAYFER

IT seems a long time now since Whitsun, but I have memories of a ride in the sun I made during that holiday on my silent friend, the bike. I had taken it in mind to go to France, on my cycle, to visit a friend overnight at Verneuil, near Paris. For a cheap weekend, there is nothing to equal the boat, and I left Dieppe at 3.30 p.m. on the Friday ready for a pleasant afternoon's ride in the sun.

First, I realised that even just across the Channel, France is much hotter than England. There it was 86 degrees—at home in Kent it had been 72. The tar was melting on the road under a bright summer sun, which blazed on me from a turquoise sky.

With a friendly rider from the Southern Paragon C.C., who told me that every road out of the port climbs a hill, I resigned myself to a long first climb, the harbinger, as it happened, of a long, hard afternoon. We climbed for about three miles before the road flattened out a little and my friend took the N 25 which led off down the coast. The road eased a little more and I settled myself for the long straight ride on N 27 to Rouen. This road goes uphill in long climbs that had me frequently in 46×23 as the road gradually went higher and higher to Totes, where my front tyre deflated suddenly as an old patch came unstuck in the heat, fortunately just by a farm which, at least, had a pond in which I could check where the air was escaping. I climbed about 20 miles and then the road began to drop just as slowly to the River Gailly, a tributary of the Seine.

At the little town of Lalaunay I stopped for fresh bread and butter and some Vichy water. This drink, alkaline and never served with ice, is excellent for hot weather as it never curbs the tongue.

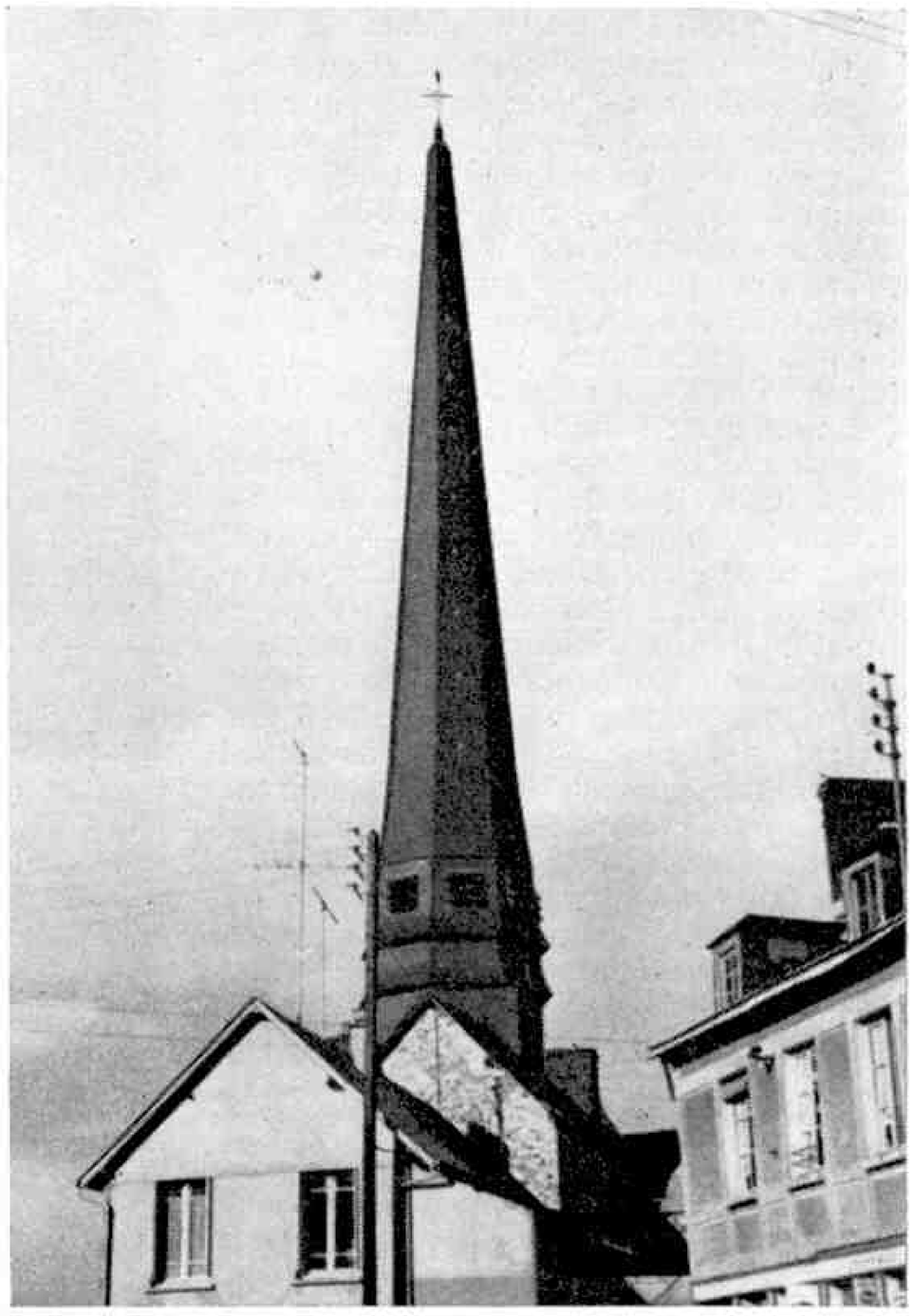
I skirted the city centre of Rouen, and the square where Joan of Arc was burned, and followed the quayside, mingling my Oh-so-English bike with the wide-tyred mopeds of the French dockers going home. From time to time one would look sideways at my unaccustomed saddlebag and smile "Anglais?" The road along the Seine was busy but flat, and the eighteen kilometres to Pont de l'Arche, where the road crosses to the Left Bank, took half an hour. The next sixteen took one hour! Once the road crosses the rivers Seine and Eure, it begins to climb. Up through the Forest de Bord I could see it shimmering in the heat, and exhaust fumes of trucks that climbed so slowly they were only just passing me in my bottom gear of 46×26.

An hour or two of this and I was feeling quite tired as the road was sticky and perspiration poured off me in the afternoon heat. I used every gear of a selection 46×51 16, 18, 20, 23, 26 as the road swung up and down hill until I reached Vernon. From there to Verneuil, however, the way was flat, and I finally arrived at 11.15, at my friend's house in a honeysweet wood. It lay under a blue moon to which a nightingale was singing gaily.

After a short stay there I decided that the return journey could be broken in two. I headed for Mantes, the gateway to Normandy, but the last of the Ile de France, with a cathedral which is a replica of Notre Dame de Paris. There I crossed to the Right Bank and followed the route of Richard the Lionheart to his castle at Les Andelys, the greatest of all his fortresses, though a ruin since it was besieged by Philip of France. The castle dominates a great loop of the Seine, and you can see it for quite a way before entering the little town. There are two roads, the Route des Cretes, which leads along the scarp head, and the little country road I took. This brought me by lush pastures where cows munched by the river, knee-deep in grasses and flowers, thicker than I believed they could ever be.

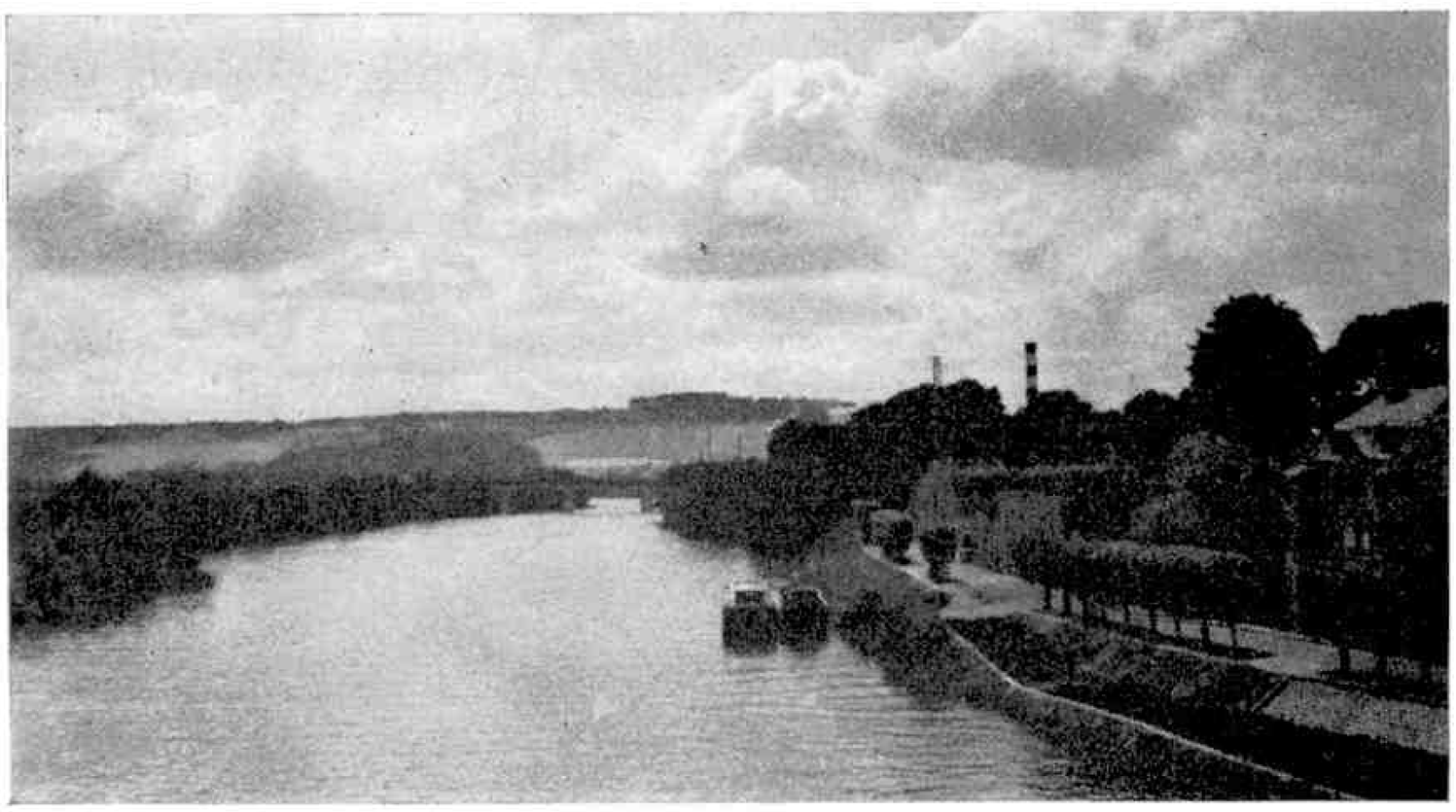
In Les Andelys I got a picture of men playing bowls with the hard iron balls the French favour, and then, since my tyre

(*Continued on page 446*)



The 175-ft. high church steeple at La Feuillie.

A view of the River Seine at Mantes. Photographs by the author.



Jimmy Armfield, English International,
Introduces A Forthcoming Series . . .

SOCCER SKILLS

This portrait of Jimmy Armfield appears by courtesy of "The West Lancashire Evening Gazette", Blackpool.

Hello Readers,

First of all, may I say how pleased I am to be with you, and that I hope you will enjoy the series of articles I shall be presenting over the next few months. They will deal with Soccer skills, and the way in which you apply them when you are actually playing yourselves. In other words, we will be bringing a Soccer lesson into your home in each separate article. I hope you will find great enjoyment reading them and that, when you get a little older, they will help to bring you success on the Soccer field.

Of course, you will be thinking: what chance have I of becoming a star of the football world? Well, to be very truthful, I used to think exactly the same thing when I was your age and, in fact, I never considered taking up football as a career. The school I attended as a boy had Rugby as its principal winter game and so the only time I could get any practice in at Soccer was after school hours. As a result, I did not play much Soccer as a boy and it was not until I was around the 16 mark that I played in any regular competition at all. Funnily enough, it was from this team—my church youth club team, St. Peter's—that I joined Blackpool. I was spotted by a scout, and although I have played for years as a fullback, was signed by the club as an outside right, the position I always fancied as a youngster.

First illustrated article by this famous player, who is captain of Blackpool F.C., will appear in next month's "M.M."

At Bloomfield Road, the home of Blackpool F.C., I soon gained promotion to the "A" team and it was in one of these games that my future was made out for me. Our full-back sustained an ankle injury and had to leave the field. I volunteered to move to full-back, but why I did so I will never know. At once things seemed to be going right for me, and after the game I was congratulated on what our team manager described as "a plucky display". He must have been fairly pleased because when the team-sheet went up the following week my name appeared in the number 2 spot, and that has been my position ever since.

Of course, things have not always been rosy in the Armfield garden, and I can remember the occasion when I was dropped from the team after a cup tie defeat by West Ham, in 1958. I had been having a poor time of it for a few weeks, and I remember giving away a goal which rocked our side and gave the "Hammers" the encouragement they needed. We were beaten 5–1, and I was dropped! Since then I have fought back into the team, and I have been lucky enough to play for England on 38 occasions.

Football is a funny game: one minute you are down, and the next you are on top of the world. If you practice hard enough, concentrate, and aim high, (which in this context means having plenty of ambition—not shooting over the crossbar!) there is no reason why *you* cannot be a good footballer, and, just as I did, play for the team you are now watching each week.

Meccano Model-Building Competition No. 2

The prizewinners in this competition are as follows:

Section A (Competitors under 14 years of age on June 29, 1963)

First Prize, Cheque for £5 5s.: I. Clover, Stowmarket; Second Prize, Cheque for £3 3s.: R. A. Clark, Leicester; Third Prize, Cheque for £2 2s.: C. Robins, Boksburg, South Africa.

Ten Prizes each of 10/6: S. Gee, Bingham, Nottingham; D. J. Cowan, Guildford, Surrey; A. Gardner, New Penshaw, Co. Durham; F. Pattison, Street, Somerset; I. R. Page, Pudsey, Yorks.; T. Langenberg, Quebec, Canada; J. B. Longson, Stockport; C. Rose, Bedford; M. R. Field, Keynsham, Bristol; A. Pratt, Sutton-on-Sea, Lincs.

Certificates of Merit

C. Seftel, Lusaka, N. Rhodesia; P. Carter, Limpsfield, Surrey; D. MacArthur, Midlothian; B. Taylor, Faringdon, Berks.; C. Lofstedt, Winchester, Hampshire; D. Richards, Stockport; J. Lovelock, Battle, Sussex; B. Turnbull, Redcar; T. Van Geldermalsen, Nelson, New Zealand; M. Kidd, Buxton, Derbyshire; G. Scott, Harrow; W. Moberly, Whyteleafe, Surrey; J. Chrisholm, Ampleforth, Yorks; N. Haak, Rotterdam, Netherlands.

Section B (Competitors aged 14 or over on June 29, 1963)

First Prize, Draft for £7 7s.: G. Servetti, Piacenza, Italy; Second Prize, £5 5s.: K. W. Cameron, Kentucky, U.S.A.; Third Prize, £3 3s.: G. Cheetham, Edinburgh.

Ten Prizes of £1 1s.: D. Barney, Reading; J. A. Green, Shiremoor, Northumberland; A. Leyland, Manesty, Cumberland; D. Manduca, St. Julians, Malta; R. Moore, Nova Scotia, Canada; R. H. Groen, Amsterdam, Holland; M. Boyman, Essex; M. Kemp, Lower Hutt, New Zealand; H. W. Henry, Strood, Rochester; D. Backler, Haverhill, Suffolk.

RAILWAY NOTES

Contributed by R. A. H. Weight

A Fresh Look Round At Paddington

PADDINGTON Station, over 100 years old, in part and for more than a century the London terminus of the Great Western Railway—now the Western Region, B.R.—has been considerably enlarged and improved at various dates. Lately its general appearance has been much brightened up. There is new paintwork in lighter hues, and new-style roofwork. There are clear, re-designed platform notice boards and indications, neat, standard kiosks and entrances, and so on. There is a further extension, as at other large British stations, of the 24-hour clock system.

In July, I watched the traffic working during busy spells. Late on a Sunday evening long-distance trains from the West of England, Bristol, South Wales, Cheltenham and Worcester lines, conveying thousands of week-end travellers, were arriving at frequent intervals,mostly headed by Western, Warship and Hymek diesel-hydraulic locomotives. As it happened, the Worcester express hauled by 4–6–0 No. 7023, *Penrice Castle*, was the only one that was late to any considerable extent.

Next morning, after spending the night very comfortably at the adjacent Great Western Royal Hotel, I noted No. 7005, *Sir Edward Elgar*—a Castle—and No. 7928 *Wolf Hall*, in similar service, although there were reports of crew training and the coming introduction of Hymek diesels along the Oxford–Worcester–Hereford route.

The W.R. chocolate and cream carriage livery is disappearing. Maroon rolling stock is now standard, and the down *Cornish Riviera Express* was all in maroon, including the locomotive No. D1039 *Western King*.

There was news at Paddington of more express trains between London–Newport–Cardiff–Swansea, together with a big speed-up, with Western class diesel haulage, to be introduced for the winter. I will include details soon.

Steam pannier tanks were still much in evidence on empty stock working between Paddington and Old Oak Common Depot.

References have been made in several issues during the past year or so to the faster and more frequent London–Birmingham – Wolverhampton – Shrewsbury service, and to the additional calls made at High Wycombe without increase in timings. To sample this service, I chose the 12.10 p.m. from Paddington, booked to reach Birmingham, 110½ miles, in just under two hours, including stops at High Wycombe and Leamington Spa. The well-filled restaurant car train had "10-on", weighing about 380 tons gross; the 2,700 h.p. locomotive was No. D1004, *Western Crusader*, making a quick return to Wolverhampton and soon to be setting off again on a further round trip to London. It seemed an unlucky day, however, as track repair or renewal works, doubtless necessary, caused three long slowings, the first very soon after starting.

We were nearly pulled up by signals through Princes Risborough, eight miles beyond High Wycombe, where we could have been attaining high speed downhill, but we averaged 75 m.p.h. thereafter, with maxima in excess of 80, over undulating gradients past Bicester and the flying junction at Aynho, where the older Didcot–Oxford route joins in, and on through Banbury. High speed is required as the start-to-stop schedule from High Wycombe to Leamington, 60¾ miles in 56 minutes, averaging 65 m.p.h., is decidely the quickest of its kind and allows little margin. Actually, 63 minutes were taken on account of delays, and we were approximately ten minutes late reaching Leamington and Birmingham, Snow Hill, as we encountered more signal checks on the outskirts of Birmingham.

On the way down towards Birmingham, numerous tender engines—Halls, 2–8–0s etc.—were in use, largely on freight and miscellaneous duties, or standing by.

Also in July, my friend Mr. Norman Harvey logged a splendid performance by 4–6–0 No. 7036, *Taunton Castle*, along a different route, as far as Evesham, perhaps the last such opportunity, on the 11.15 a.m. principal-stations express to Worces-

W. R. Diesel hydraulic locomotive No. D1037 "Western Empress" on a Wolverhampton express passing Denham. B.R. Western Region photograph. Contrast to the modern diesel is provided by the engine in the picture at the top of this page, taken by A. F. Smith. The small 0–4–0 saddle tank is W.R. No. 1338, formerly a Cardiff Railways engine used for dockside shunting duties.

Left: L.M.R. 4–6–0 No. 46130 "The West Yorkshire Regiment" is climbing steadily to Ais Gill summit in this fine action picture. This and the lower photograph are by C. Ord. Below: "The Great Marquess", now privately owned and restored to L.N.E.R. livery as No. 3442, is shown here on an enthusiasts' special near Grassington.

ter and Hereford. This was a 355-ton, 10-coach train. A good deal of time was gained on the ordinary weekday schedule, beginning particularly well with a run down from Paddington to the first stop at Reading, 36 miles in 35½ minutes. After attaining 75 m.p.h. on level track, then easing round the Didcot avoiding line and over the North Junction, the train suffered a signal stop outside Oxford. There was a punctual restart to the run along the pretty but rather winding and hilly Cotswold line. Time was well in hand at the Kingham and Moreton-in-Marsh stops, on a route gradually rising over a long distance. An exhilarating sprint around 80–84 m.p.h. down the 1 in 100 Campden bank into the Vale of Evesham proved that there was still plenty of "life" in that particular steam locomotive!

OVER AIS GILL

Up to a few years ago, the rebuilt Royal Scot three-cylinder 4–6–0s were fairly regular performers over the difficult 228-mile Glasgow–Carlisle–Leeds route on such trains as the *Thames–Clyde Express*, between St. Enoch, Glasgow, and St. Pancras, London. Subsequently, A3 Pacifics were used a good deal before regular diesel locomotive haulage was introduced.

Recently, I joined this named southbound train at Carlisle to travel over the highest main line in England, that of the former Midland Railway. This reaches bleak moorland altitudes more than 1,100 ft. above sea level between Ais Gill and Blea Moor signal boxes, close to the respective summits of the long climbs largely at 1 in 100 from north or south. Many readers will recall descriptions in the *M.M.*, such as *The Long Drag* in last June's issue, of the fearfully difficult construction problems which beset the contractors, and of the wild and remote terrain, the solitary country stations, many with beautiful gardens, some acting as official weather reporting centres, and so on.

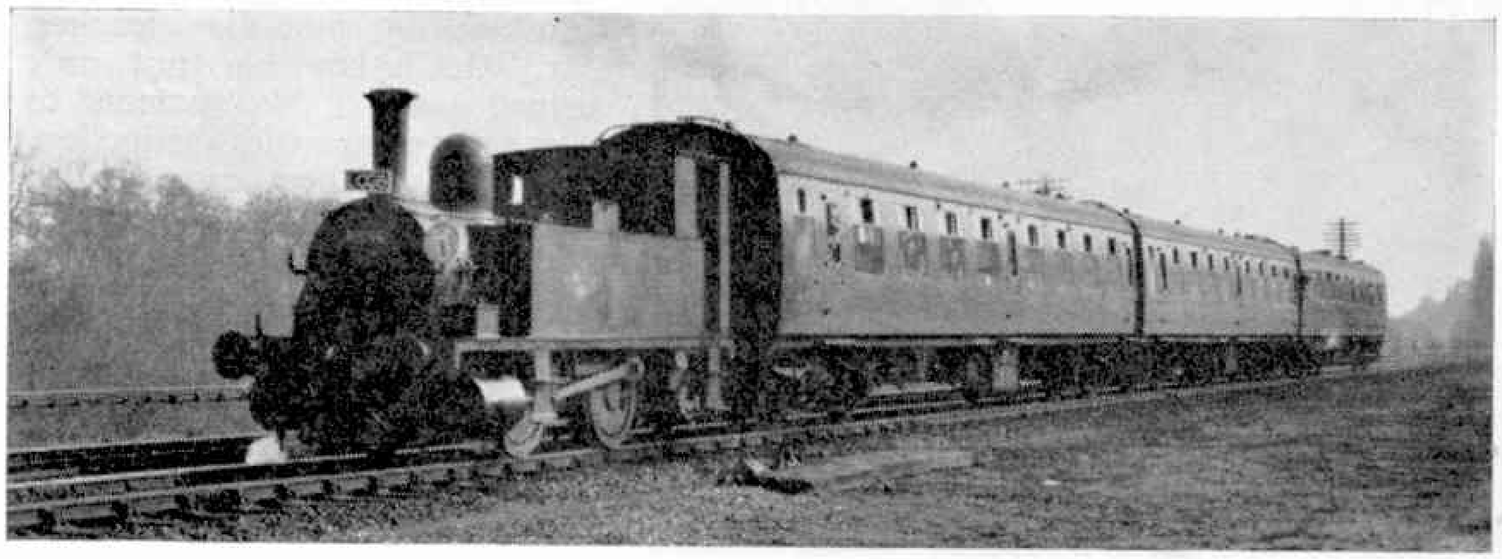
It was announced at Carlisle that the train had been delayed on the way from Glasgow owing to an engine failure before Dumfries. I was most interested to see No. 46116, *Irish Guardsman* arrive from Upperby Shed ready to take over. A B.R. class 5 4–6–0 eventually brought the nine-coach train into Carlisle, also hauling the disabled Peak class diesel that should have worked through to Leeds.

It was bright and sunny, grand from the scenic aspect, apart from one shower, and the veteran *Irish Guardsman* did well especially up Ais Gill, pulling hard, also attaining up to 75, then 69 m.p.h., on short level or downhill stretches past Lazonby and Appleby. The southbound climb is not quite so continuous as the northbound run. Between Smardale Viaduct and Ais Gill, about nine miles nearly all at 1 in 100 up, speed dropped only from 51 to 42 m.p.h. and the summit was passed in the good time of 56½ minutes for the 48¼ miles from Carlisle.

Over 60 m.p.h. was touched along the mountain table-land past Dent to Blea Moor Tunnel, before we had to make a rather hampering stop at a lonely water crane to fill up the tender tank, as the highest pick-up troughs in the world, at Garsdale, were out of use. Down the long, sharp descent to Settle 75 m.p.h. was sustained in places, with braking and easing on account of curves and restrictions. Along the contrasting and more level 26 miles from Skipton into Leeds, in largely industrial and populous surroundings there were two signal stops and a repair slowing. But the engine was not at its best. It was certainly not the fault of the crew, understandably tired on a hot day, that we took ten minutes more than the 128 minutes then allowed for an arduous 113 miles non-stop. A Peak class B.R./Sulzer diesel took over at the other end—through trains have to reverse at Leeds—to work forward to St. Pancras, via Sheffield and Leicester.

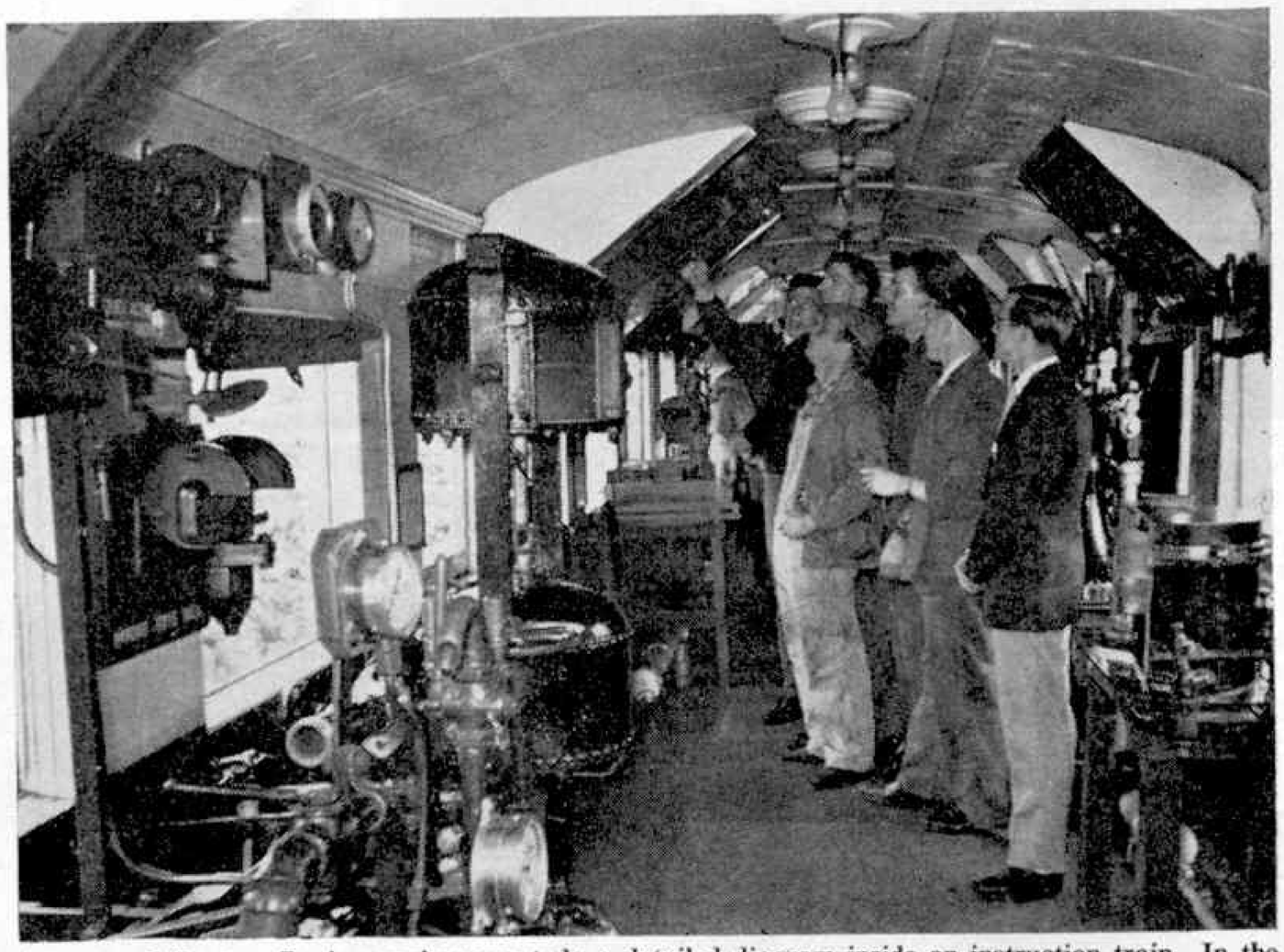
(*Continued on page 446*)

The three-coach special in this photograph by S. C. Nash makes an unusual load for No. 30096, a Southampton dock shunting tank formerly named "Normandy", now withdrawn from that service.



TRACKSIDE NEWS

By
"PLATELAYER"



A group of Eastern Region enginemen study a detailed diagram inside an instruction train. In the foreground are some of the components of a brake mechanism.

MR. H. G. FORSYTHE, who has frequently written articles for the *M.M.*, tells me about a visit to the Eastern Region's Steam Instruction Train. He writes: "A steam instruction train is one aspect of railway equipment and operation the public never sees and rarely hears about. This is a pity, for a steam instruction train is a veritable paradise for anyone interested in locomotives.

"Take, for instance, the Eastern Region's steam instruction train. Consisting of three coaches, it tours Motive Power Depots throughout the Region, moving unobtrusively from place to place. It really is a school on wheels for enginemen, and it gives instruction to would-be drivers coming up for examination. At the same time, it provides the opportunity for old hands to refresh their knowledge of the workings of the steam locomotive.

"The Eastern Region's train was the first locomotive instruction train in the country. It started life in 1914 as a single instruction coach, now No. 961800, owned by the Great Eastern Railway. Soon afterwards, the Great Central Railway introduced their coach, now No. 951650. These coaches operated for a number of years on their respective railway systems. After Grouping, in 1923, the two coaches passed into the ownership of the L.N.E.R. They were combined in 1925 and operated as a two-coach train right up to 1952. In that year the train was overhauled at Doncaster Works and a third coach, No. 320043, was added.

"Not long ago, the three-coach train visited King's Cross Motive Power Depot and I was privileged to pay it a visit. The train contains a magnificent collection of the various parts of a steam locomotive, many cut away and open to show exactly how they work. Models and diagrams, too, are used to explain and teach. The models are really superb pieces of craftsmanship and are exactly the same as the originals in everything but size.

"Part of the middle coach is fitted out as a classroom, complete with blackboard and pointer for the teacher and chairs for the students.

"In charge of the train is Headquarters Inspector W. McCluskey. A first-class teacher, Mr. McCluskey has not only helped many of his 'students' to pass their exams with distinction, but has given them an unrivalled knowledge of the intricacies of that complex and very interesting machine—the steam locomotive."

* * * *

On the left is Driver Blaxill, who is explaining a feature of a vacuum ejector. This and the upper photograph are by H. G. Forsythe.

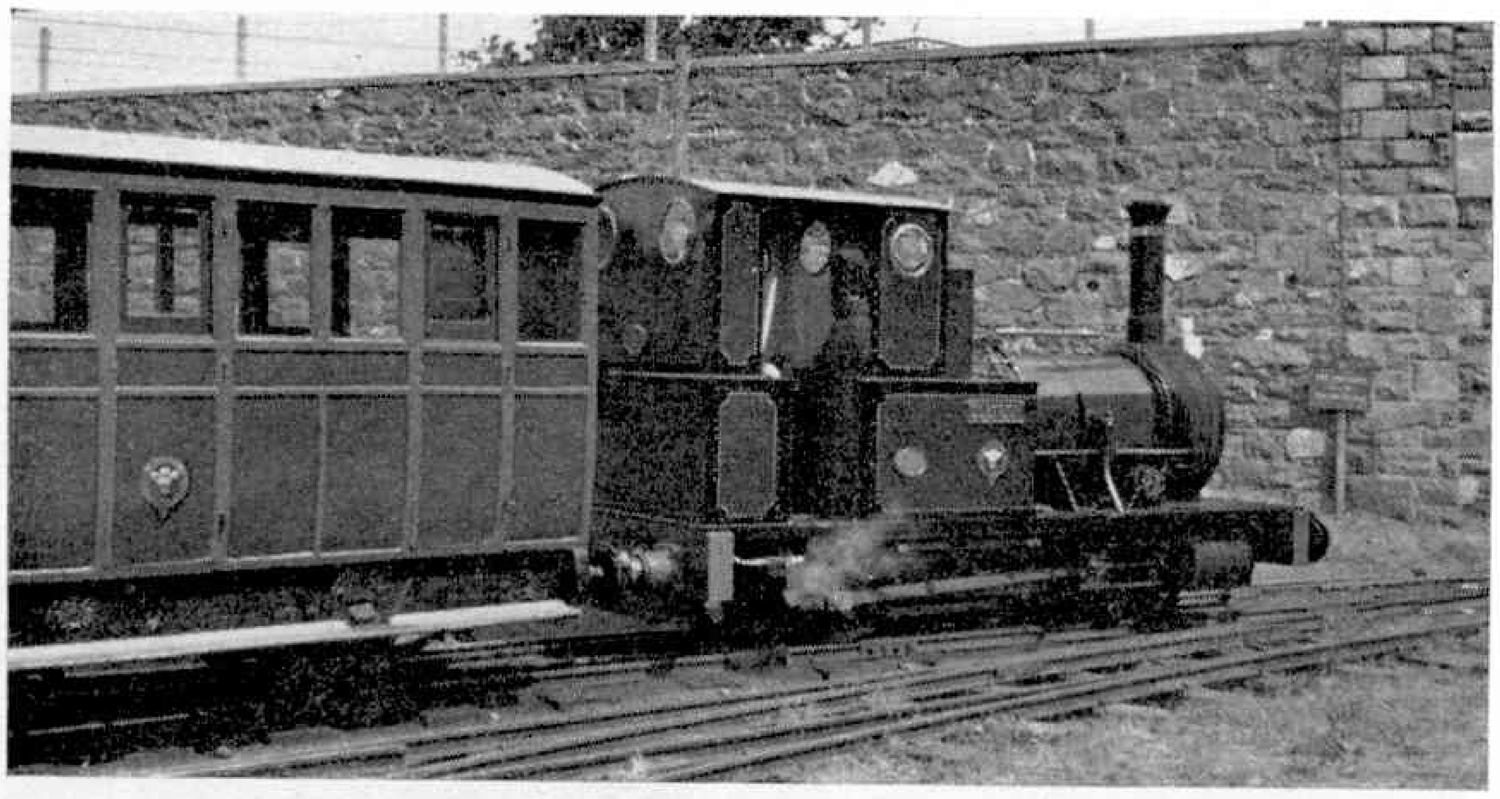
This summer, many holidaymakers will have visited Towyn, on Cardigan Bay, and the famous Talyllyn Railway. Many who were present on June 15 doubtless saw the almost triumphant return of Talyllyn locomotive No. 2 *Dolgoch* to the railway after an absence of almost nine years. This locomotive was one of the two original engines on the line and was ordered from the firm of Fletcher, Jennings & Co., of Lowca Works, Whitehaven.

Dolgoch, together with No. 1 *Talyllyn*, were responsible for the hauling of all the traffic, both passenger and goods, for almost 86 years. Neither locomotive was ever reboilered or extensively rebuilt, which is an astonishing record of longevity, and is, in fact, believed to be unique in locomotive history. When the Talyllyn Railway Society gained control over the line in 1951, No. 1 had been out of commission for some years, and was in lamentable condition. No. 2 *Dolgoch* handled the traffic during that season and, indeed, until 1954, when she was withdrawn from service for overhaul.

* * * *

On June 1 the last ex-L.B.S.C.R. E4 0–6–2 tank left Brighton for its final journey to Eastleigh, where it was scrapped. This was No. 32479, which was deputising for a diesel shunter at Newhaven until May 19. This appears to have been its last duty.

The E4 class of 74 locomotives were originally designed under Robert Billinton for the former London, Brighton and



The veteran locomotive "Dolgoch" at work again on the Talyllyn Railway after a long period out of service. Some notes on this veteran engine appear on the previous page. Photograph by John Adams, reproduced by courtesy of the Talyllyn Railway Preservation Society.

South Coast Railway and were built between the years 1897 and 1903. They were mainly employed on goods and shunting work. Twelve were sent to Arras, in France, during the 1914–18 war, where they were said to have done good work. Some E4s were rebuilt with circular smokeboxes, which rested on a saddle-shaped casting. Four engines, classed E4X in consequence, were rebuilt with larger boilers. Scrapping of the E4 class started in 1954.

* * * *

An order for twelve of the most powerful diesel locomotives ever designed for a Canadian Railway has been placed by the Canadian Pacific Railway with General Motors Diesel Limited of London, Ontario. The locomotives, which will be special high-speed freight units, are of 2,500 h.p., and are scheduled for delivery early next year. They will be more powerful by 700 to 800 h.p. than the majority of diesels in freight service in Canada. In this design the heart of the locomotive is a V–16 diesel engine equipped with a turbocharger, and featuring a number of design improvements. New higher-capacity traction motors and redesigned electrical controls are to be incorporated, many of them much reduced in size from previous models.

The new units are the results of research by the builders to step up both the speed and hauling capacities of freight locomotives. They can operate up to 35 per cent. faster with the same load or are capable of moving up to 90 per cent. more tonnage at the same speed than diesel units placed in service ten years ago. The emphasis on speed for these new Canadian Pacific diesels stems from new freight train schedules set up by the railway in recent months to give faster service to shippers. On long-distance runs, as much as a day has been knocked off previous schedules. Outwardly the new units will have a lower look than earlier ones, as a result of a drop of eight inches in the roof height, and the application of a "snub nose" front to the engineer's cab.

* * * *

The Mobil Oil Company is another of the big oil companies to sign a contract with British Railways for the movement of bulk consignments in block train loads. The contract requires that company to place on rail a growing tonnage of oil products for at least ten years. The specially-built rail tank wagons are to be fully fitted, with automatic brakes and other equipment, and will be used for high-speed running in the block trains.

British Railways have already similar contracts with the Petrofina, and Gulf Oil organisations.

* * * *

A contract for the construction of 100 covered aluminium hopper cars has been awarded by Canadian National Railways to Marine Industries Limited of Soral, Quebec. Delivery is expected this autumn.

The car bodies are cylindrical in design, much like an inverted pear. Their aluminium construction and unique design results in a capacity of 88 tons, which is eight tons greater than that of the conventional hopper car. In addition, they have a less complex structure than the box-type hopper, resulting in lower operating and maintenance costs.

Aluminium hopper cars are used extensively and increasingly in the movement of bulk materials such as cement, lime, salt, silica, sand, sugar and potash.

Two prototypes of the cars were first tested by the railway three years ago. These were engineered jointly by Canadian National research and development staff and the Aluminium Company of Canada, Limited. In February 1962, Canadian National gave its first order for 200 of the cars, and the present order will boost the railway-owned fleet of such vehicles to more than 300.

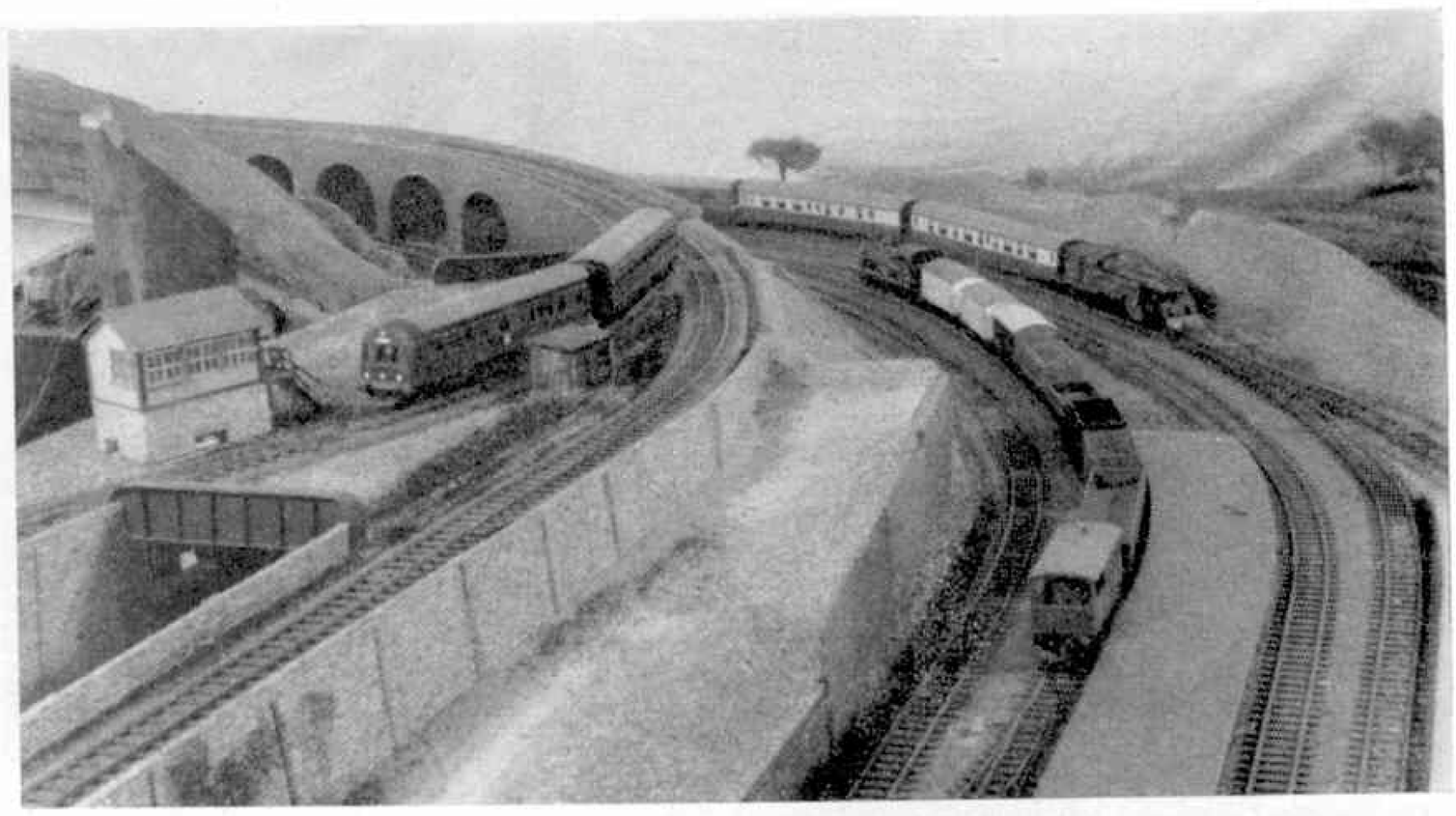
* * * *

British Railways, in co-operation with steel firms in the Scunthorpe and South Wales areas, have recently introduced an express freight service, whereby steel products, even of exceptional weight and length, can be accepted in the Scunthorpe area one day and delivered to the private sidings of steel firms in the Newport, Cardiff and Ebbw Vale areas the following day.

To maintain this service, two trains leave Scunthorpe for Severn Tunnel Junction daily, one at 3.34 a.m., the other at 3.08 p.m. Each train is diesel-hauled and conveys 50 bogie bolster wagons carrying Scunthorpe steel products. In the reverse direction, a train leaves Cardiff at 4.00 a.m., and another from Margam at 12.15 p.m. daily, for Scunthorpe. These trains convey South Wales coal for the Scunthorpe furnaces, as well as other freight and empty steel-carrying wagons. The speedier transit times provided by this new direct service should be of great value to the steel industry.

One of the platforms at Verney Junction Station, which is on the L.M.R. Bletchley–Oxford line and was at one time the furthest outpost of the Metropolitan Railway, boasts unusual decorations in the shape of three brass monkeys. They are inscribed with the well-known maxims "Hear no evil", "See no evil" and "Speak no evil", and you see them in this picture by B. W. Leslie.

ROUND THE SOCIETIES



The above photograph shows part of the large 00 layout belonging to the Merseyside Model Railway Society. This is one of the many layouts to be seen at their exhibition in Bluecoat Chambers, Liverpool, from October 9 to 12 inclusive.

OFFICIALS of model railway organisations up and down the country have written to say how much they appreciate the notes, started in last month's "Meccano Magazine," dealing with the activities of various societies whose common interest is railways real and model.

A further survey of countrywide activities is given below. Readers who wish to join any of the organisations mentioned should get in touch with the Secretary of the Society concerned and *not the* Meccano Magazine *offices*.

NORTHOLT MODEL RAILWAY CLUB

The Northolt Model Railway Club meets every Wednesday and Friday evening at the Northolt Village Community Centre, Ealing Road. The club has five layouts in operation—TT; 00 Two-Rail; 00 Stud Contact; 0 Gauge and Narrow Gauge. Also in its early stages is an outdoor track for 3½-inch and 5-inch gauges. Modellers of all gauges or skills are cordially invited to pay us a visit. For further inquiries please write to the Hon. Sec., Mr. J. F. Saville, of 381a North Circular Road, Neasden, London N.W.10.

SOLIHULL MODEL RAILWAY CIRCLE

The circle's headquarters at 412 Norton Lane, Earlswood, Solihull (Tel. Earlswood 301) are open to new members over 18 years of age. Two layouts are in course of construction, a TT layout and a large 00 layout 40 ft. long by 20 ft. wide. Visitors are welcome to attend, but if possible should telephone the above number before doing so.

RAILWAY AND CANAL HISTORICAL SOCIETY

The above-named Society, in conjunction with North Eastern Railway Association and the Railway Correspondence and Travel Society, held a tour of the Stockton and Darlington Railway and the Ironstone Railways of Cleveland on Saturday and Sunday, June 15–16, 1963. A joint Society study tour of the Stockton and Darlington Railway and of early ironstone railways in the Cleveland area was arranged by the North Eastern Group of the R.C.T.S. for the same weekend.

MERSEYSIDE MODEL RAILWAY SOCIETY

This exhibition, which is the biggest ever to be held on Merseyside, is taking place in the Bluecoat Chambers from October 9 to 12, and is to be opened by Mr. Geoffrey Byrom, Editor of the *Meccano Magazine*.

The exhibition occupies the spacious music hall and five other rooms, there being a total of more than 46 stands with seventeen working layouts and many other societies and traders. The six club layouts will be present—00, TT, H0 American, 0, 4 mm. scale, 9 mm. Narrow Gauge, and EM composed of stations owned by Messrs. T. Walsh, C. Smith and M. Rickett. Trams are also well catered for, with two layouts. The admission charge is 2/– for adults, and 9d. for children under 14 years. Advance tickets may be obtained from the Exhibition Manager, Mr. M. Rickett, of 40 Eastwood Street, Liverpool 7.

LEWISHAM MODEL RAILWAY CLUB

The club has started an extensive programme of reconstruction on the layouts. The exhibition layout is to be almost completely rebuilt. The annual series of visits to places of interest is due to begin. New members are always welcome at the clubroom, and further details may be obtained from the Hon. Sec., Mr. R. A. Sawyer, of 1 Haseltine Road, Sydenham, London S.E.26.

EPSOM AND EWELL MODEL RAILWAY CLUB

Track nights are held every Monday at St. Francis' Church Hall, Ruxley Lane, Ewell. Talks, film shows, etc. are held on the second Thursday of the month at Pit House, Cheam Road, Ewell. Layouts —0 and 00 gauge. Minimum age for membership 16. Inquiries to Hon Sec., Mr. J. Thornton Ball, of 33 Howard Avenue, East Ewell, Epsom, Surrey. Tel. Ewell 8717.

THE WELSH HIGHLAND RAILWAY SOCIETY

The Welsh Highland Railway was built just after World War I on a narrow gauge of 1 ft. 11½ in., from Portmadoc to Port Dinas over some of the best scenery in this country, near Snowdon. It was demolished in 1941 and now the Welsh Highland Railway Society hope to rebuild it as near to the original as possible. The society is badly in need of support, and would welcome new members. Membership charges are: Junior Members (under 18) 10/6, Full Members (over 18) 2 gns. Further details can be obtained by sending a stamped addressed envelope to: Membership Secretary, Mr. Charles G. S. Chadwick, of 19 Weybridge Park, Weybridge, Surrey.

COVENTRY MODEL RAILWAY CLUB

The club was inaugurated during January 1959, the purpose of their association being "the promotion of railway modelling and the construction of a 00 gauge layout for exhibition purposes". The club now has a membership of 35 including one lady. The age limit is fourteen and no entrance fee is charged for membership, but a small weekly subscription is

asked to cover the cost of rent and lighting.

Trips are organised from time to time to places of railway interest, and members usually take an active part in model railway exhibitions held in the Midland area. Applications should be made in writing to the Hon. Secretary, Mr. R. J. Ellis, of 15 Ravensdale Road, Wyken, Coventry.

RAILWAY CORRESPONDENCE AND TRAVEL SOCIETY

The indoor programme of the Railway Correspondence and Travel Society starts in September of each year. This autumn, lectures and discussions on matters of general railway interest will be held in Birkenhead, Preston, Manchester, Nottingham, Oxford, Bristol, London and at sixteen other centres. Non-members of the society are welcome at all these functions. Details of society activities may be obtained from the Hon. Secretary, 33 Ashfield Avenue, Frizinghall, Bradford 9.

HULL MINIATURE RAILWAY SOCIETY

The minimum age for membership of this society is 14 years, and forms of application are obtainable from the Secretary, Mr. R. M. Beatson, of 23 Hillcrest Drive, Beverley, Yorks.

Layouts in TT, 00 and 0 gauges are under construction in the club rooms. Many events are planned for the winter programme, including an annual dinner, film shows, talks and auctions. Visits are also planned to places of railway interest throughout the year.

LUTON AND DIST. MINIATURE RAILWAY CLUB

The Luton and District Miniature Railway Club has its own clubroom in the centre of Luton and meetings are held each Wednesday evening. Light refreshments are available. A small branch line 00 layout is almost complete around three walls of the club room and a portable exhibition layout in the same scale is now well in hand.

During the winter months additional meetings on Tuesdays are held at a local school with the local rail enthusiasts' club —the South Bedfordshire Locomotive Club. These start on October 15 next and include film shows, and visits by speakers from British Railways and the Tallylyn Railway. Details of the Model Club and the S.B.L.C. may be obtained from Mr. B. C. Lockey, of 107 Carlton Crescent, Luton, Beds.

RAILWAY PRESERVATION SOCIETY

This is the only national organisation for the purpose of making the most effective use of resources available for standard gauge preservation. Associated schemes in North London, East Midlands, West Midlands, West Riding and Scotland. For details of the nearest scheme to your home, write to the General Secretary, R.P.S., Wansbury Way, Swanley, Kent.

The society is sponsoring a carriage and wagon preservation fund, which seeks to accumulate £1,000 for the purchase and restoration of, primarily, a Midland Railway Royal Saloon, which is being offered for sale by the authorities for £300. Donations should be sent to Mr. R. T. Yates, Chartered Accountant, of 21 Market Place, Wednesbury, Staffs.

NARROW GAUGE AND LIGHT RAILWAY SOCIETY

This is a relatively new organisation open to all enthusiasts interested in light railways, whether of standard or narrow gauge, both at home and overseas. The society publishes an illustrated monthly journal, the *Light Railway Review*, and has an excellent library which is freely available for reference by members. A programme of visits to light railway installations, both passenger-carrying and industrial, will be arranged as a regular feature of the programme. The subscription is 7/6 a year.

The secretary will be happy to supply further details and a copy of the society's prospectus, together with a specimen copy of the *Light Railway Review*, on receipt of a 6d. stamp. Hon. Secretary, Mr. Roger Crombleholme, of 28 Mount Road, New Malden, Surrey.

THE GAUGE 0 GUILD

The annual general meeting of the Gauge 0 Guild will be held on Saturday, October 12, at 2.30 p.m. This year the venue is Keen House, Calshot Street, London (within a short walk of King's Cross Station). It is pointed out to members who may not have attended before that official business takes up only part of the time available. There is ample opportunity for informal discussion, together with a running session on the Model Railway Club test track, which will once again be made available. All members attending are cordially invited to bring models for running or for static display. Hon. Secretary, Mr. H. F. Bower, of 81 The Drive, Bexley, Kent.

THE 2 mm. SCALE ASSOCIATION

The association, which models only in 2 mm. scale, meets twice monthly at Keen House, Calshot Street, London N.W.1.

The following dates have been arranged at which there will be a lecture on some subject of modelling interest: Sept. 27, Oct. 12 and 25, Nov. 16 and 29, Dec. 14.

The Friday meetings start at 6.30 p.m. while those on Saturday begin at 3.00 p.m.

All those interested in attending will be very welcome. They will be able to inspect models members may bring and the association's own publications, in addition to castings and printed building sheets. Further information from the Hon. Secretary, Mr. J. D. Willis, of 69 Hawkhurst Way, West Wickham, Kent.

TRAMWAY AND LIGHT RAILWAY SOCIETY

On October 19, the 0 Gauge Group of the society will hold a transport exhibition and 35 mm. slide presentation at the Euston Dining Club, Cardington Street, London N.W.1. The exhibition takes place from 5 p.m. to 6.15 p.m., and the slide show from 6.20 p.m. to 9.45 p.m. Seats for the slide show may be reserved by writing to T.L.R.S., 42 Ravensbourne Road, London S.E.6, enclosing a 3d. S.A.E.

CAMBRIDGE UNIVERSITY RAILWAY CLUB

The past year has again been a successful one for the club. A number of distinguished speakers have given talks on a wide range of subjects, and the external activities have also been thriving. These have included a weekend tour of North-East England, and the annual restaurant car dinner. Readers going up to Cambridge are invited to contact the Secretary, Mr. J. M. Meara, at King's College, and visit the club at their Fair, or attend an informal meeting in the McCurdy Room, 16 Corpus Christi College, at 8.15 p.m. on Thursday, October 10.

BOURNEMOUTH MODEL RAILWAY CLUB

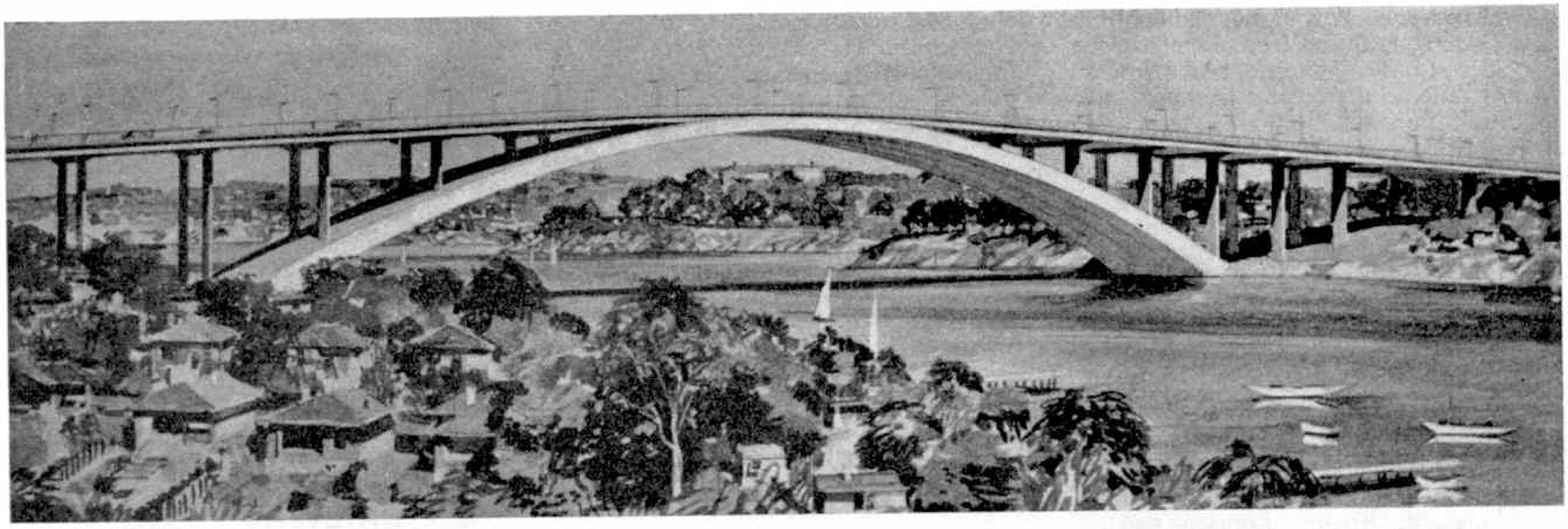
The next monthly meeting will be held on Saturday, October 12, when the club's annual film show will take place. Meetings are held in the Rechabite Hall, Kemp Road, Winton, at 2.30 p.m. Further details of meetings and membership will gladly be supplied by the Hon. Secretary whose address is 16 Broadlands Avenue, Southbourne, Bournemouth, Hants. On Saturday, October 19, there will be a tour of the Somerset and Dorset Railway. Full details of such visits can be had from the Hon. Fixtures Secretary, 81 Stanley Green Road, Poole, Dorset.

LEEDS MODEL RAILWAY SOCIETY

At the society's room in Potterdale Mills, Dewsbury Road, three layouts, in 0, 00 and TT gauges, are available for operation each Wednesday evening. Improvements are being carried out on the 0 gauge fine-scale layout, while individual members' systems in other gauges provide much interest and enjoyment.

Preparations are under way for the 1963 Exhibition—the ninth—at Leeds Corn Exchange from October 31, to November 2 inclusive. Admission charges will be 1/6d. adults, 6d. children.

Membership is open to anyone over the age of 14 and details may be obtained from the Secretary, Mr. D. H. Townsley, of 19 Baronscourt, Whitkirk, Leeds 15.



A TRIUMPH OF ENGINEERING

The New Gladesville Bridge

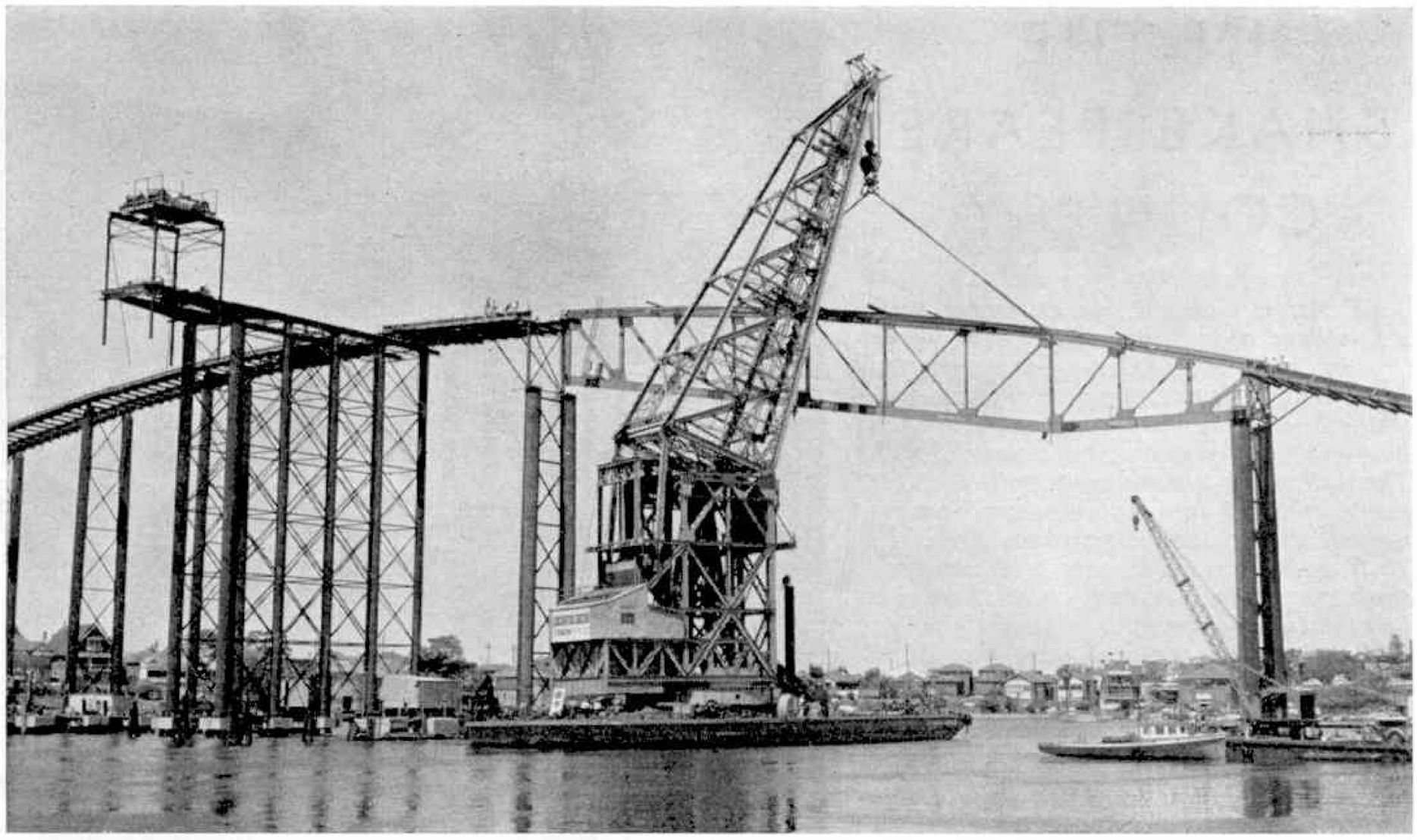
SPANNING the Parramatta River, three miles from its junction with Sydney Harbour, is the new Gladesville Bridge, built at a cost of more than £2,500,000. The bridge, which consists of a four-ribbed concrete arch having a span of 1,000 feet, with four prestressed concrete girder spans each 100 feet long on either side of the arch, has been erected primarily to take the place of a two-lane, opening span bridge which was built in 1881.

The information on which this article is based has kindly been provided by the Department of Main Roads, New South Wales, Australia.

The old bridge is approaching the end of its useful life, and is inadequate for modern traffic. You see its position in relation to that of the new bridge in the illustration at the foot of this page. The new crossing is, in fact, part of the future North-Western Expressway which will serve a large section of the northern area of the metropolis. A bridge under construction over the nearby Lane Cove River, at Fig Tree, and a projected Tarban Creek Bridge, between Gladesville and Fig Tree (also shown in the illustration) will be incorporated in the future Expressway.

These three bridges, which all occur within a length of about 7,000 feet, and the associated road works, will greatly increase Sydney cross-harbour traffic facilities, and provide a favourable route for part of the traffic which otherwise would seek to use the Sydney Harbour Bridge about four miles to the east.

The illustration at the top of this page shows the new Gladesville Bridge as seen through the eyes of the artist. The aerial view at the foot of the page shows a network of new bridges superimposed on a photograph of the locality. The bridges illustrated are (A) The old Gladesville Bridge (B) The new Gladesville Bridge (C) The Tarban Creek Bridge (D) The Fig Tree Bridge.

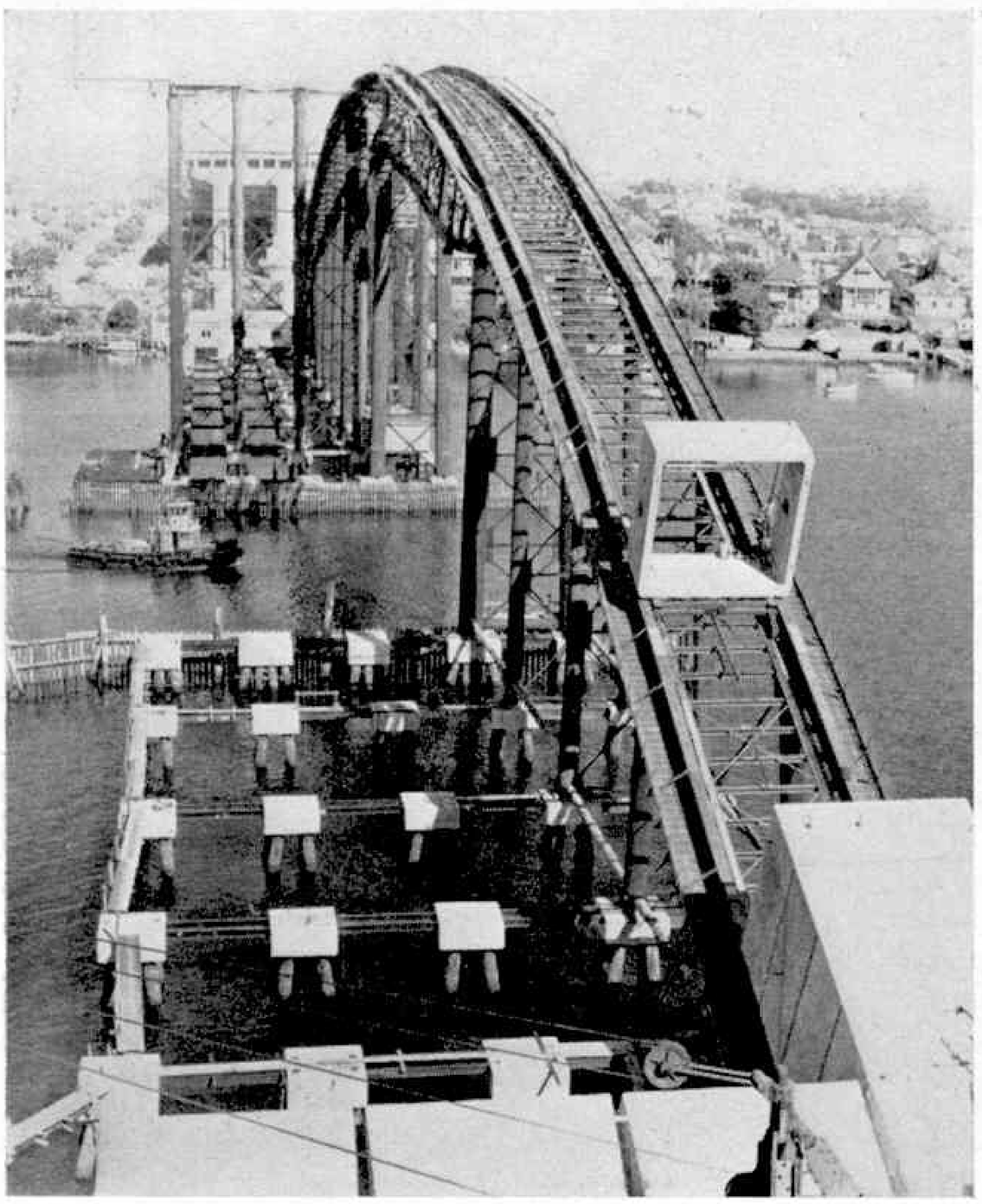


Right: Falsework, on which the ribs of the arch were erected, being placed in position during the building of the new Gladesville Bridge. The Titan crane is placing in position a truss span which was provided to allow vessels to pass through until the arch was completed.

Below: Another view of the bridge during building showing the concrete box units which form the arch ribs being placed in position. All the illustrations are by courtesy of the Department of Main Roads, New South Wales, Australia.

The contract for the building of the new Gladesville Bridge is with a partnership of Stuart Bros. of Sydney, and Reed & Mallik of Salisbury, Great Britain.

In inviting tenders for the bridging of the crossing, the Department of Main Roads advertised that it would be prepared to accept offers for a bridge to be constructed to the tenderer's design or to the Department's design. The concrete arch design for the crossing was an alternative to a steel cantilever bridge designed by the Department of Main Roads, and was prepared for the contractors by Messrs. G. Maunsell & Partners, Consulting Engineers of London and Melbourne. The French organisation, Société Technique Pour L'Utilisation De La Precontrainte, of Paris, acted as consultants at several important stages in the building of the huge arch.



The total length of the new Gladesville Bridge will be 1,900 feet, and the arch span of 1,000 feet is the longest concrete arch span yet constructed in the world.

Each of the separate ribs is designed as a hollow concrete box made up of pre-cast sections (see the illustration on the left) During erection the pre-cast sections, or blocks, are put into position on steel falsework to form one rib, and when completed the rib is raised off the falsework by an ingenious method of jacks built into the rib itself. The falsework is then moved sideways for the next rib.

SIX LANES OF TRAFFIC

The road on the bridge will provide for six lanes of traffic and there will be a footway six feet wide on each side. The underside of the arch is more than 120 feet above high water level for a width of 200 feet in its middle section, the maximum clearance being 135 feet. This clearance is necessary for sea-going ships to pass under the bridge, and causes the grade of the roadway to be steeper than on the Sydney Harbour Bridge.

The deck system of the bridge consists of pre-stressed concrete girders supported on pre-stressed concrete double column piers, each column being of thin plate section. The columns in the approach spans rest on the sandstone of the river banks, and the columns over the arch rest on the arch ribs themselves. Over the central portion of the arch, the deck rests directly on the arch ribs.

It is expected that the new bridge will be ready for traffic about the middle of next year.

Air News—

(*Continued from page 413*)

When the pallet falls to the ground, the shock felt by the troops inside it is expected to be less than that which a person feels when riding inside a fast lift. The pallet slides about 100 feet and is brought to a gradual halt by two energy absorbers. Using this technique, one C–130 squadron could deliver two battle groups of about 3,000 men in less than six hours.

IN THE SHAKESPEARE COUNTRY

Pictorial Feature by Leslie E. Wells

AT Aston Cantlow, an attractive little village near Stratford-on-Avon, where in 1557 John Shakespeare married Mary Arden, a fine example of a black-and-white fifteenth-century timbered Guildhall has been restored at a cost of nearly £3,000. The wall on the ground fioor, built to make part of the hall into cottages, has been removed, giving a meeting room 30 ft. by 16 ft. called the Guildroom, with timbered walls and ceiling, mahogany block floor and large open fireplace built in local stone.

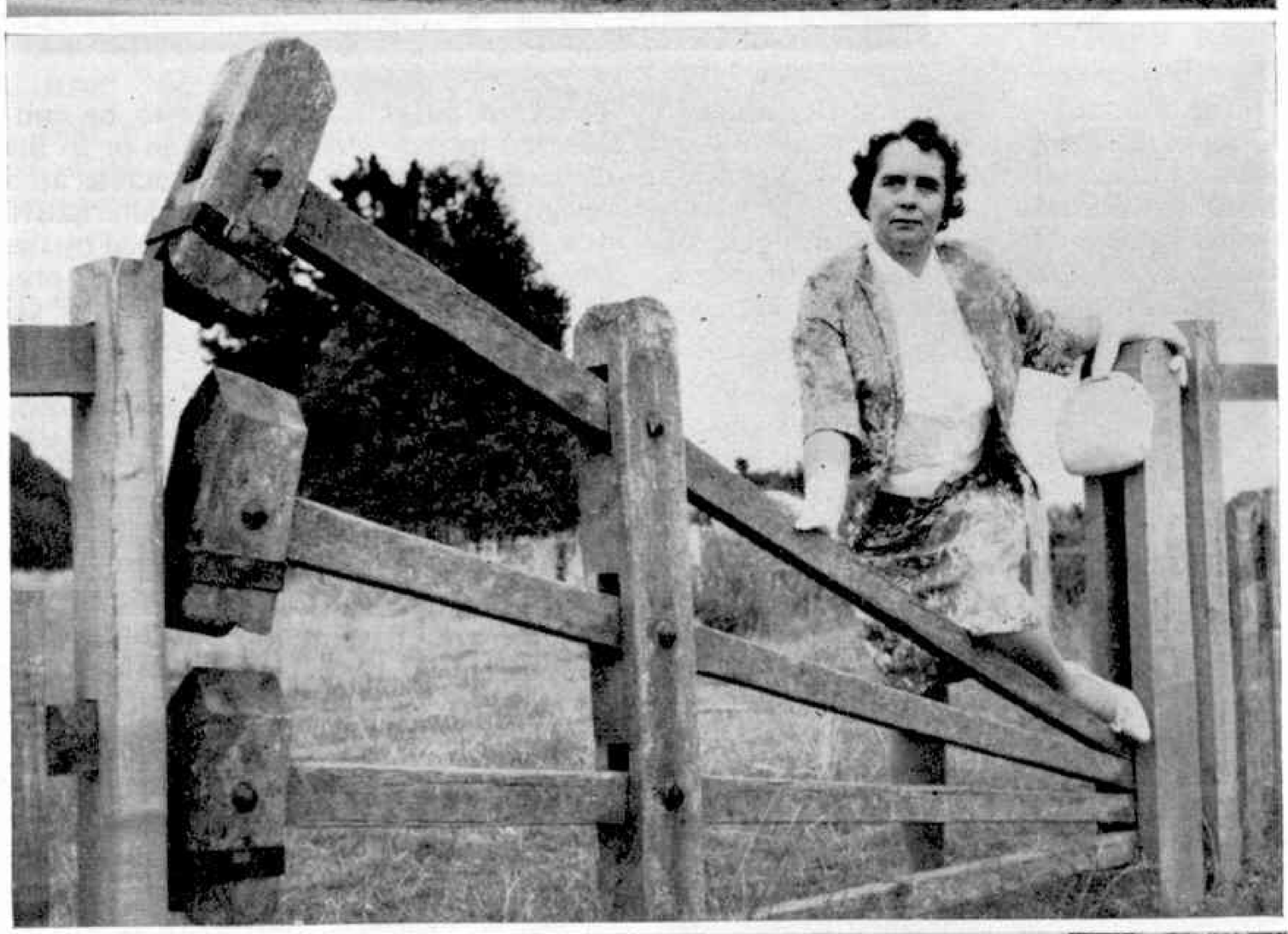
Shortly after the last war, the Aston Cantlow Village Hall Committee started on a plan to incorporate the Guildhall into a community centre. It included the construction of a modern hall at the rear, with seating accommodation for 150 people and a sprung maple floor for dancing.

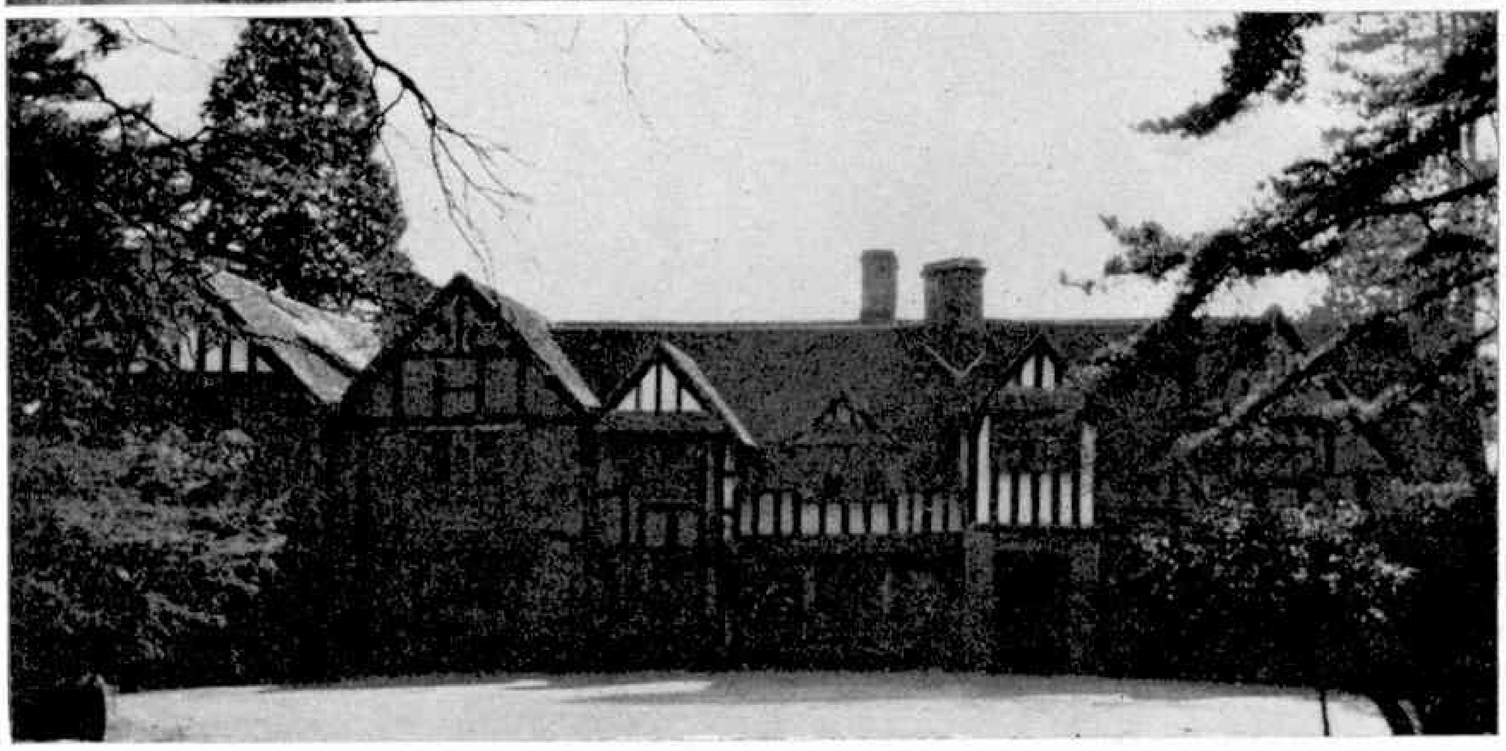
* * * *

At Charlecote, near Stratford-on-Avon, famous for its beautiful house associated with Shakespeare, is a quaint obstacle called a tumble-down stile, said to be the only one remaining in the country. They were common in the countryside several hundred years ago. The centre post acts as a fulcrum, and only slight pressure is needed on the top bar at one side to make the other sections drop so that people can step over. When pressure is removed, counter balances (seen clearly in the second picture) return the bars to form a gate. Such stiles are claimed to have originated in Warwickshire. Their purpose was to allow people free access while restraining farm animals.

* * * *

At the end of a charming tree-lined drive in the tiny village of Rowington, in Warwickshire is the half-timbered house (bottom picture) called Shakespeare Hall, which has a link with the famous poet. The house is well preserved and was at one time moated. Here, several Shakespeares have lived. In 1742 the house was called "Wood House" and owned by a William Shakespeare, said to have been a kinsman of the poet, who married a local girl named Ann Ives. Thomas Shakespeare, the poet's uncle, came to live here and his son John was apprenticed to William Jaggard, the publisher of a collection of "Mr. William Shakespeare's Comedies, Histories and Tragedies" in 1623. This was the famous First Folio. It is said that Shakespeare wrote "As You Like It" in this house.

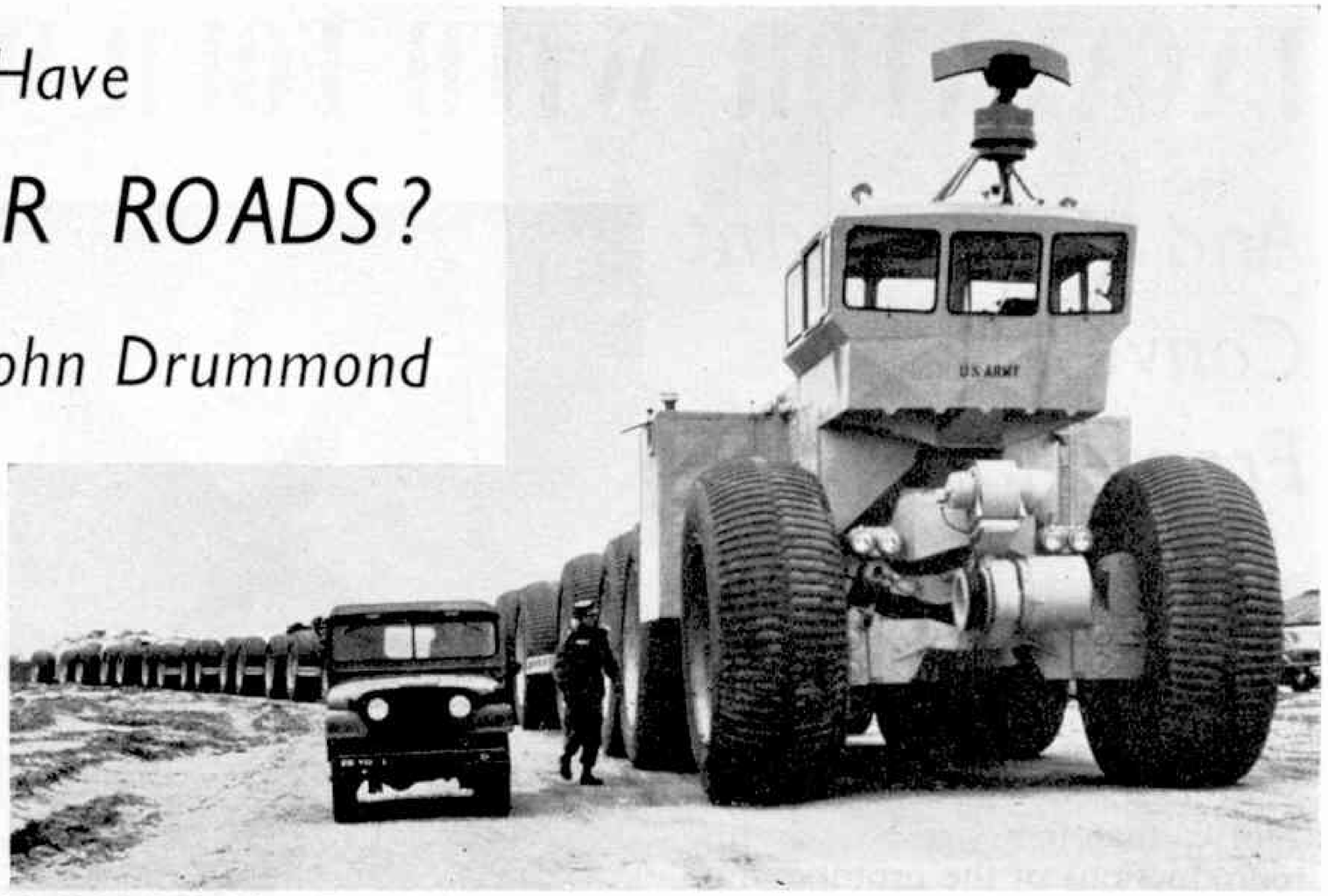




How Soon Before We Have

TRAINS ON OUR ROADS?

Asks John Drummond



The Overland Train is a "Trackless Train" since it needs no railway lines to operate. Note the huge wheels, ten feet high and four feet wide, to ensure flotation on soft terrain when needed.

IS the day near when we shall see "trains" taking to the roads, equally at home snaking through villages, winding over forest paths, or blazing new trails over desert lands?

The thought springs to mind when we learn that a 13-unit "overland train", initially planned for military use, is now in production in Texas.

But what an odd train! Every rubber-tyred wheel—and they are claimed to be the largest in the world—is ten feet high and four feet wide. And every wheel, of which there are 54, has its own independent drive with enormous power behind it. The entire train of thirteen units is 560 feet long—well over a tenth of a mile! And one man can operate it over the trickiest terrain, using finger-flick control!

It is not surprising, then, that a train so equipped should be able to overcome almost any obstacle in rough territory, even when drawing its full load of 150 tons.

Before this unorthodox and powerful overland train was planned, however, a smaller 4-unit train was rigorously and successfully tested by the U.S. Army Transportation Corps, in 1956, on the Greenland ice-cap and elsewhere. Known as the Tourneau Train, this unusual vehicle proved its versatility as a cargo-hauling "train" under the most exceptionally adverse conditions.

But then came the thought, why restrict such a vehicle to four units? Why not have eight or twelve—or more? So the 13-unit overland train was designed. This consists of a lead control car, two power cars and ten 4-wheel cargo cars. Four gas turbine engines of new design operate the generators which, in turn, provide electric power for the wheels, steering, and other electrical accessories.

Secret of the overland train's incredible power lies in the independent drive wheels, each one of which has a high-torque electric motor geared directly to its rim, the power being received through flexible electric cables connected with the generators.

Since each wheel is "shod" with enormous tubeless tyres (ten feet high and four feet wide, remember) built for shock resistance and high flotation, the overland train will be able to operate over virtually every type of country.

Let us imagine we are privileged to watch the overland train as it starts a long journey, with every car loaded to its maximum. The crew, consisting of the driver, an assistant–driver–navigator and a radio operator, clamber aboard the control car. While the driver seats himself at an electric console, the others take up their navigating and radio positions.

The signal to move off is given. With surprising lack of noise (there is a steady, growing "hum"), the overland train starts on its way, with each car tracking automatically behind the one in front.

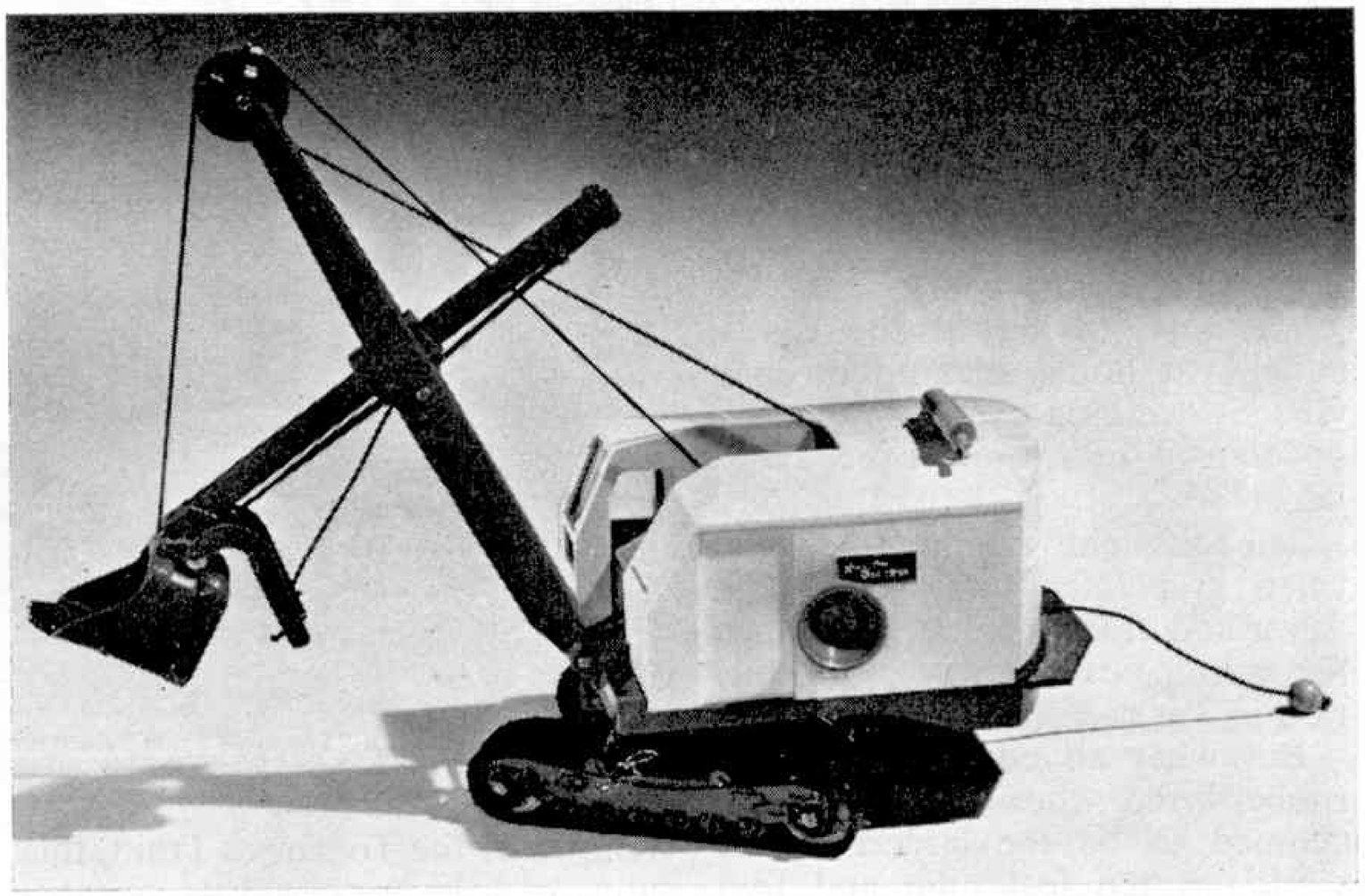
At the console, the driver operates a simple finger-tip switch—not a wheel—which he flips to right or left according to the desired turning direction. Steering with this switch may seem odd, but it is claimed that control is perfect, especially as the control car is power steered.

As the train vanishes from sight, one might wonder how and where the crew will spend the night. The answer is—very comfortably, in the (*Cont. on page 447*)

The Overland Train, built as an army supply vehicle for the U.S. Army Transportation Corps, is seen here ready for a test run.

EXCAVATOR WITH FOUR-WAY CONTROL

And An Elegant Convertible From America



A close-up view of the fine new Dinky Supertoys No. 975 Ruston-Bucyrus Excavator.

Dinky Toys News

By The Toyman

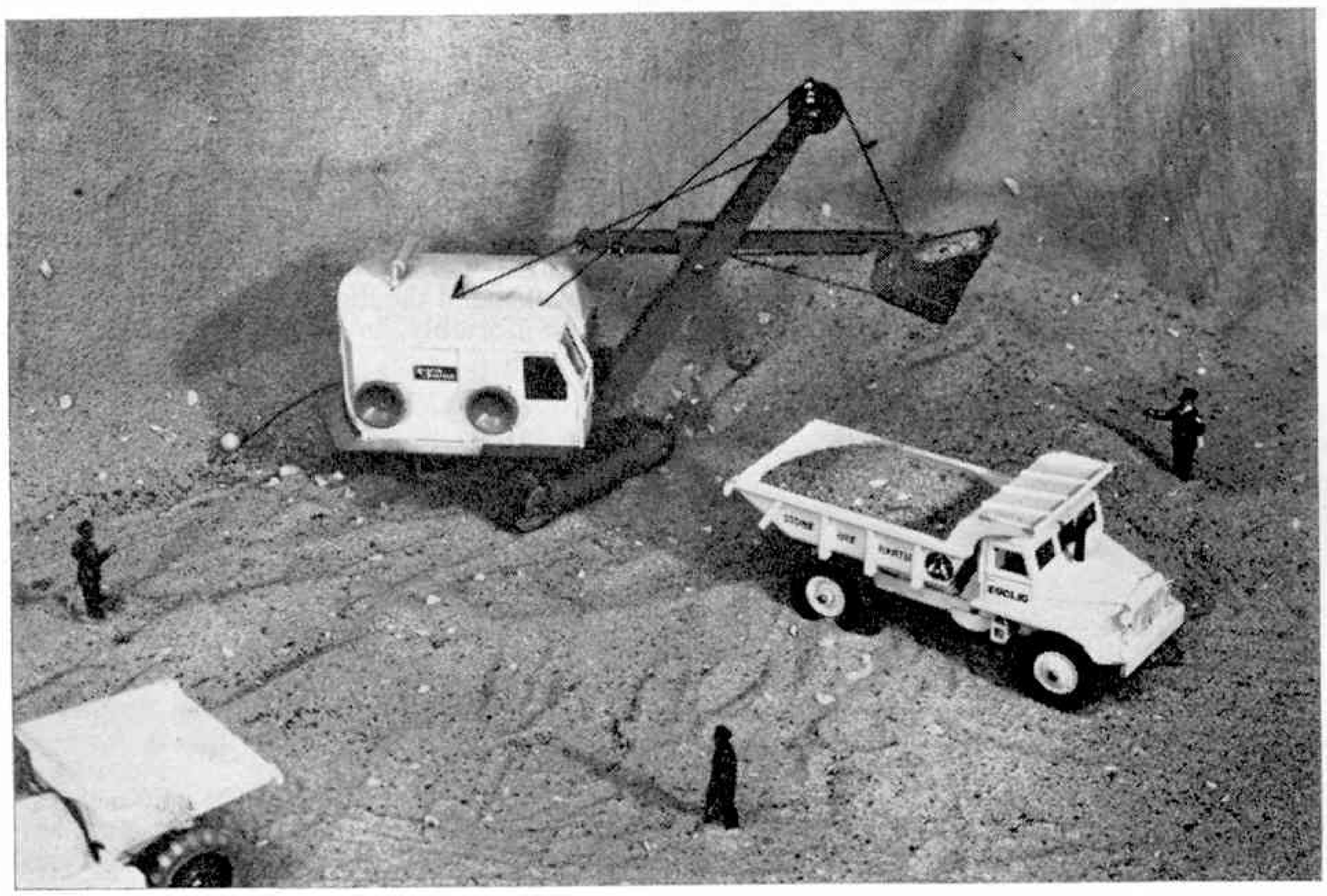
NO matter which direction their hobby takes, be it cars, ships, trains, etc., many collectors of models prefer replicas that have operative features to add to their general appeal—on condition, of course, that they are also faithful reproductions of the prototypes on which they are based. Our first new release this month is one such miniature which, unless I am very much mistaken, is destined to be the number one model in its field.

The Ruston-Bucyrus Excavator, illustrated here, is quite the most splendid working model of its type which I have ever seen. Not only does it perform all the intricate digging manoeuvres of its full-size counterpart, but a pull on a toggle at the back of the cab causes the bottom of the bucket to open, so that a load, or "bucket-full", can be deposited in a highly realistic manner.

The prototype machine is manufactured by Ruston-Bucyrus Limited, excavator specialists, of Lincoln, and is equipped with two power units—a diesel engine and an electric motor. The former is a Ruston-Paxman V–4, which develops 132 h.p. at 900 r.p.m. An independent petrol-engine driven air compressor is incorporated for starting purposes. The electric motor has an output of 75 h.p. and a synchronous speed of 1,000 r.p.m.

When working, the excavator weighs 46½ tons and, depending on the type of cables used, will exert a lifting force of anything up to 74,000 lb.—over 33 tons. If this enormous figure does not impress you, just think that 33 tons of coal would fill 660 bags—enough to keep you warm in winter for many, many years!

Our Supertoy version, numbered 975, may not be able to shift gigantic loads, but it can perform numerous authentic operations. The boom can be raised and lowered, the bucket-arm slides backwards and forwards and the bucket itself can be moved up and down. In addition, the bucket can be opened, as mentioned earlier, by pulling a toggle at the back of the cab. Since it is a model, all the above operations must be controlled by



(Left) The Ruston-Bucyrus Excavator (Dinky Supertoys version), moves a load ready for dropping it in a Euclid Rear Dump Truck.

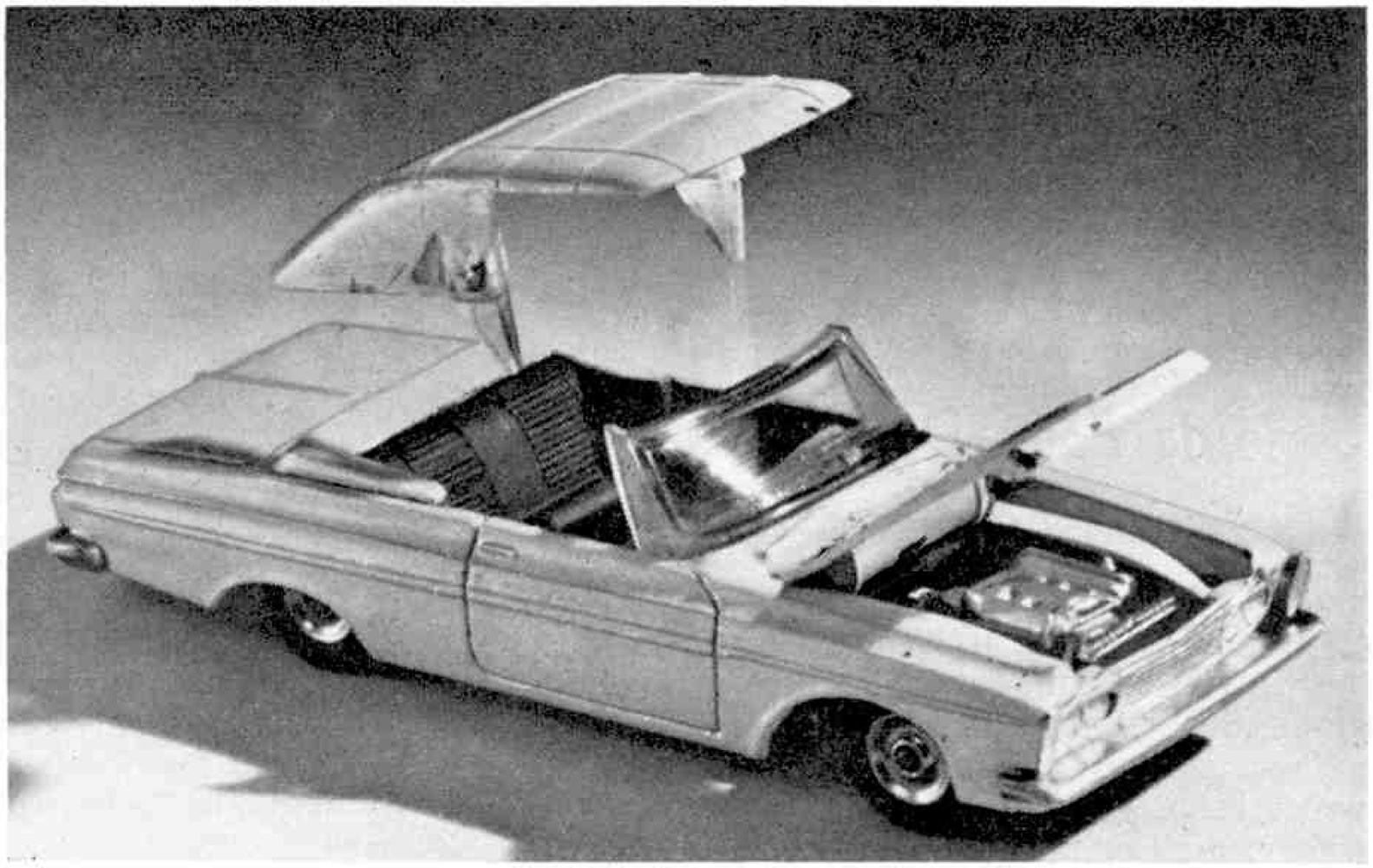
hand but, instead of cumbersome and unsightly crank handles, knurled wheels are used. These are much more simple and far easier to control.

The digging assembly and the bogie or creeper-track arrangement are made of die-cast metal, while the cab is tough polystyrene. The track itself is of black rubber and the respective colours of the other parts are green, red and yellow. They present, in fact, a bright and most attractive finish. Well does this deserve the "Super" in "Supertoy"!

Turning to our final October release is like jumping from one end of the scale to the other. Whereas the Ruston-Bucyrus represents rough and ready power, the latest Dinky represents refined elegance and luxury, although the name, Plymouth Fury, seems to disprove this.

As you may know, Plymouth are now part of the Chrysler organisation, one of America's great motor-manufacturing concerns, and the Fury is, in fact, the lowest-priced of Chrysler's "large" cars. Motive power is obtained from an 8-cylinder o.h.v. engine of 5,130 c.c. capacity, developing 305 b.h.p., which gives it a top speed of 130 m.p.h. and a cruising speed of 100 m.p.h. Transmission can be either manual or automatic, but in both cases there are three forward gears.

I said earlier that the Fury is one of Chrysler's large cars—and it really is a big one! Overall dimensions are:—length 16 ft. 10 in., width 6 ft. 3 in., height 4 ft. 6 in., wheelbase 9 ft. 8 in., front track 4 ft. 11½ in. and rear track 4 ft. 9 in. The unloaded or "kerb" weight is 30 cwt (1½ tons) which, by British standards, is a hefty weight for a private car.



This is how the hood can be detached from the smart Plymouth Fury Convertible. As you can see from the picture, when the actual hood is removed there is a simulated "folded" hood at the rear of the car.

But what of the Dinky Toys model? Officially termed "Plymouth Fury Convertible", it carries list No. 137. It really is a convertible too! The imitation "soft top" hood is removable, as the upper illustration on this page shows, and the interior detail is such that when the actual hood itself is not fitted, there is the appearance of a folded hood at the rear.

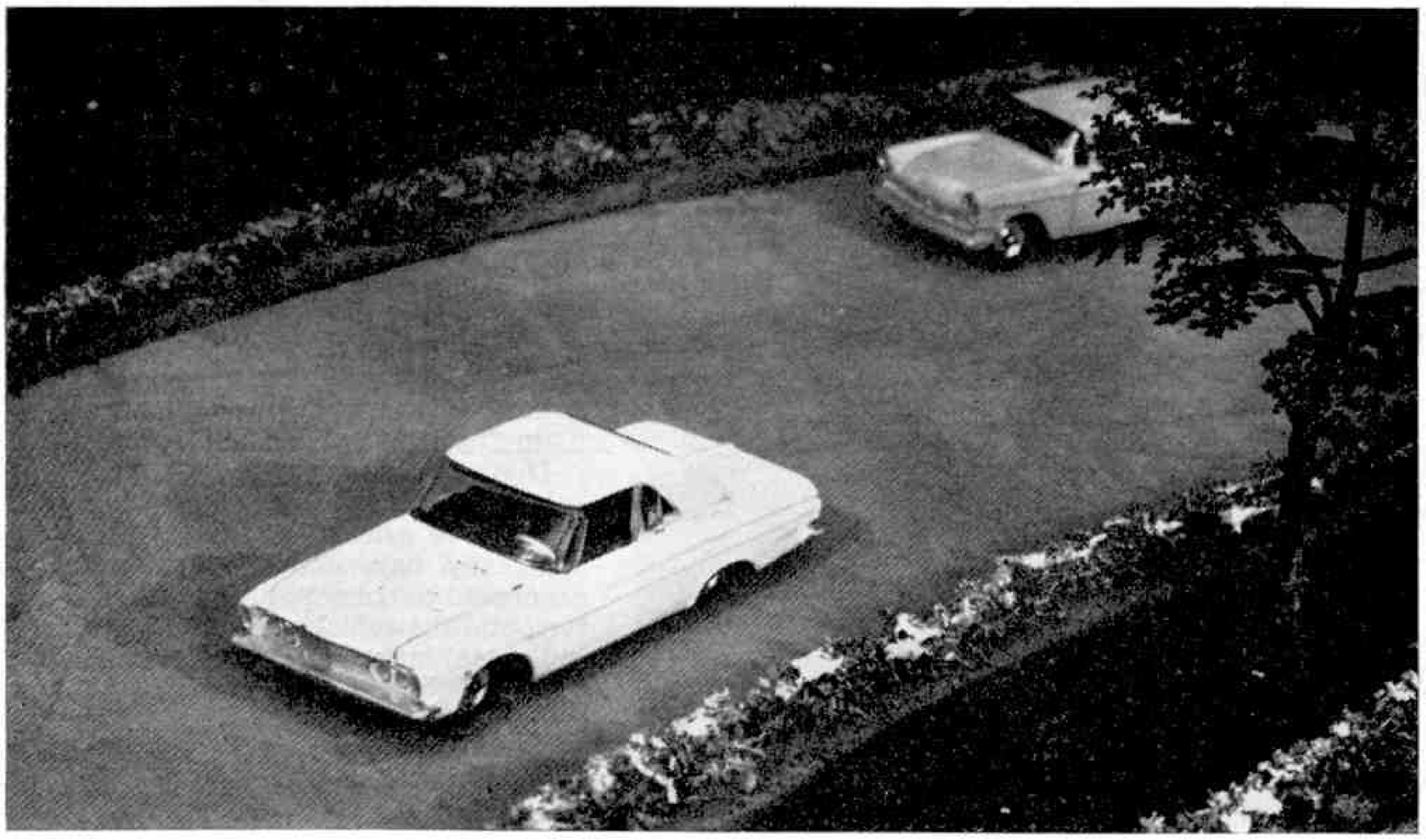
Another feature becoming more common on new Dinkies is an opening bonnet, giving access to a highly detailed, aluminium-finished engine. This is, of course, in addition to the usual points—Prestomatic steering, interior fittings, windscreen and 4-wheel suspension. The external colour scheme of pale lilac with the hood white is very modern, and, I might add, very American. Like the prototype, our miniature is a "big" model which, I am sure, will have a big following.

And now to the results of our Road Safety Competition in the June issue of the *Meccano Magazine*. You will remember that readers were given a story about Peter on his cycle, and they had to pick out the errors which this youth committed while cycling along a road. They also had to add a slogan on safe cycling.

The Road Safety Officer who set the competition, and also judged it, states that Peter made six mistakes, which were as follows: (1). He should have glanced behind to make sure that the road was clear and, if necessary, signalled, before moving off; (2). He should have signalled *before* reaching the junction and not when he was turning; (3). He should not have ridden alongside two cyclists already abreast—the Highway Code says never ride three abreast; (4). His cycle should have been parked safely and not laid down on the kerb; (5). He should not be carrying anything which would interfere with his proper control of the cycle. The books should have been placed on a carrier or in a saddle bag; (6). He should have passed *behind* the boy; the Highway Code says give way to pedestrians who are crossing.

All the winners of the competition correctly found the six mistakes, but quite a number of entrants found mistakes which were not there. Other entrants who had written excellent slogans unfortunately did not supply

(*Continued on page 447*)



The new Dinky Toys model of the Plymouth Fury Convertible is pictured here in a typical American road scene. Also in the illustration is No. 177 Opel Kapitan.

AUTOMATICALLY-OPERATED FIRE STATION

Holds Four Dinky Fire Engines

With the doors opened ready for action the Fire Station described in this article presents an impressive sight.

"READERS of the *M.M.* might be interested in the detailed photographs of the Fire Station I built for my younger son some months ago," writes P. A. Hodges, of Southsea, who is an Engineer Lieutenant in the Royal Navy.

The station is capable of containing four Dinky Toys fire engines, and is automatic in operation. The floor and forecourt are built on a slope, and within each vehicle bay are two vehicle stops, one "Manual" and the other "Automatic", both of which project through the floor. When raised they engage with the front bumper of the fire engine.

The "Manual" stop of each pair may be depressed by the "Vehicle Release Lock", and the "Automatic" stop of each pair is operated by the opening of its corresponding door. The doors are pendulous, tending always to open upwards under the action of a counter balance weight, and each is provided with an individual manual "Door Release Lock".

In addition, four door catches operated simultaneously by the "Master Door Release" bar maintain the doors closed, even though the individual manual "Door Release Locks" may be in the "free position". When the "Master Door Release" bar is operated all the doors whose "Door Release Locks" are in the "free" position open upwards.

Since the doors, in opening, themselves operate the "Automatic" vehicle stops; and since the Station floor is built on a slope, any vehicle whose "Manual" vehicle stop is in the "free" position will roll out of the Station as soon as the door opens.

* * * *

Each fire engine is backed into its bay when the Station is to be "loaded", and is held by the engagement of the "Manual" vehicle stop with the front bumper. When the door is closed over a vehicle the spring-loaded "Automatic" vehicle stop rises, and also engages the front bumper. As the door reaches the fully closed position, the spring-loaded door catch over which it has ridden rises to hold the door closed.

When the station is full, and all the doors are closed, each vehicle is held by both its "Manual" and "Automatic" vehicle stop, and the four doors are maintained closed by the four door catches.

Pressing the "Master Door Release" bar will now cause all the doors to open simultaneously, but since all the vehicles are still held in their "Manual" vehicle stops, they will remain in the Station. Operation of any "Vehicle Release Lock" will cause its corresponding engine to roll out of the Station, when it can be caught by an attendant hand and "driven" away.

If, however, after initial "loading" and while the doors are still closed, the "Vehicle Release Lock" of any engine is put to the "free" position, the vehicle will only be held by the "Automatic" stop, and since this is depressed as soon as the door is fully open, the engine will roll out of the Station with the opening of its door.

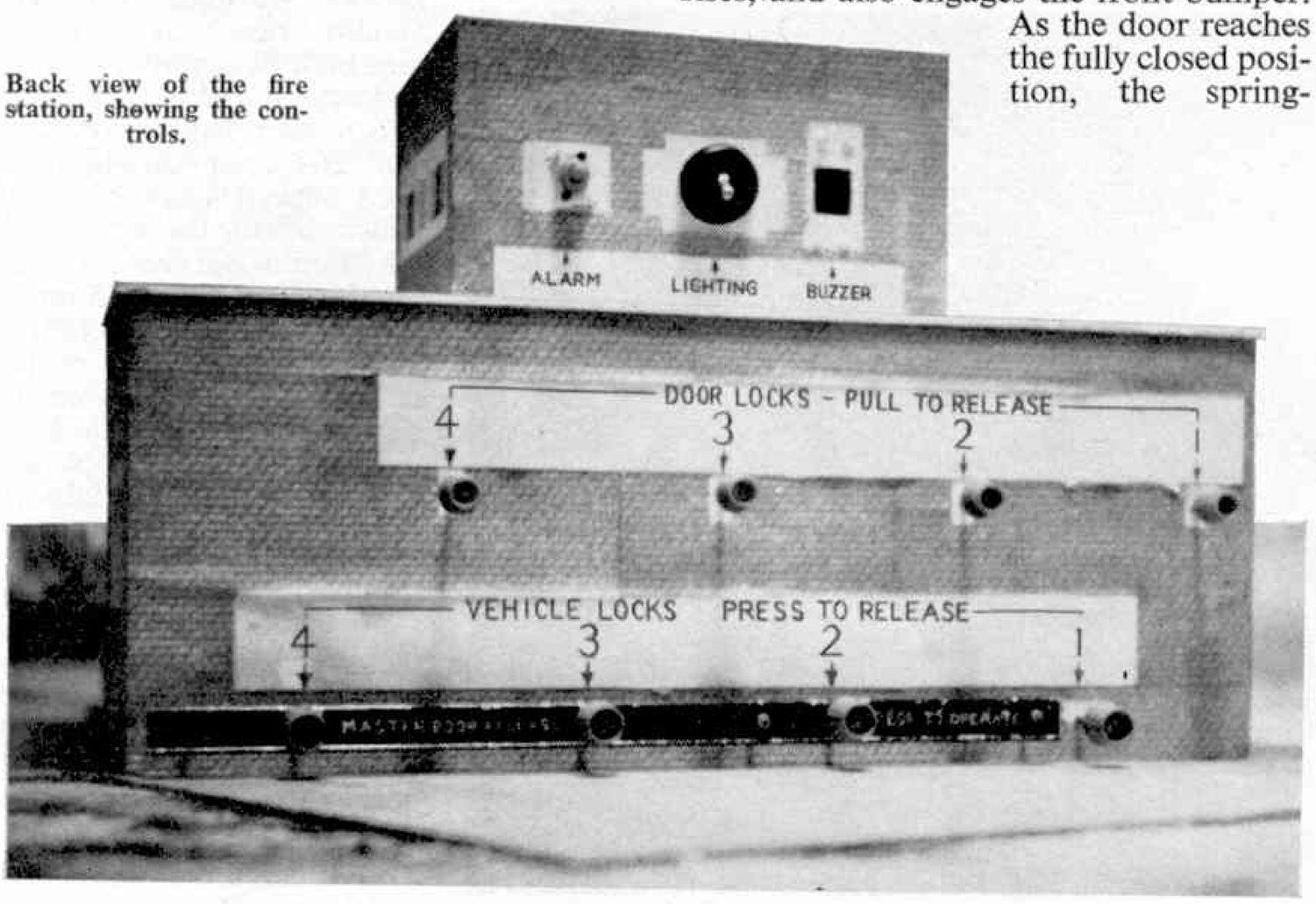
* * * *

As I mentioned earlier, each door is also fitted with its own Manual "Door Release Lock", which will maintain it closed even though its spring-loaded door catch has been depressed by the "Master Door Release" bar.

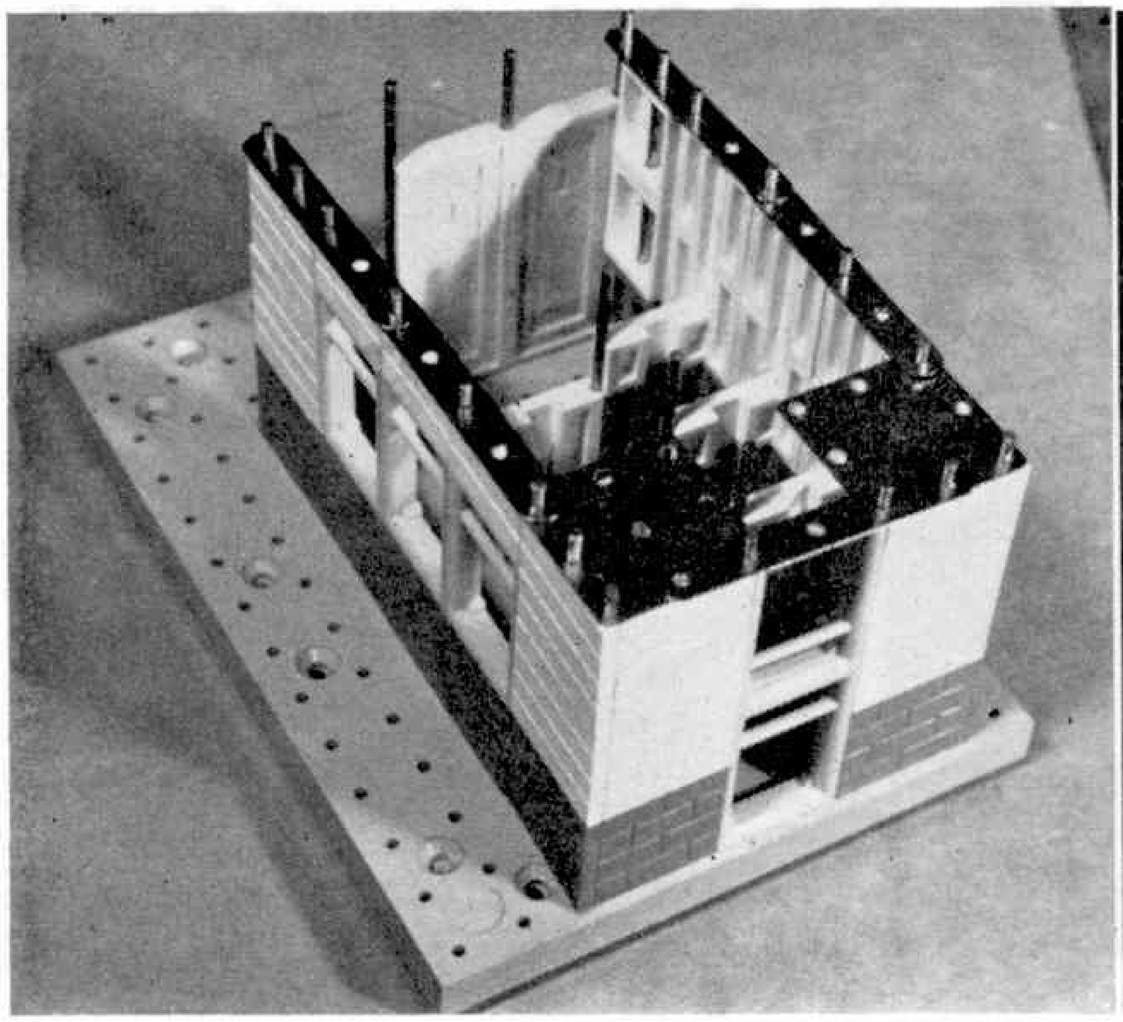
It is thus possible to arrange not only for selected doors to open, but also whether, on opening, the corresponding vehicle within will roll out automatically or remain "poised" in the Station.

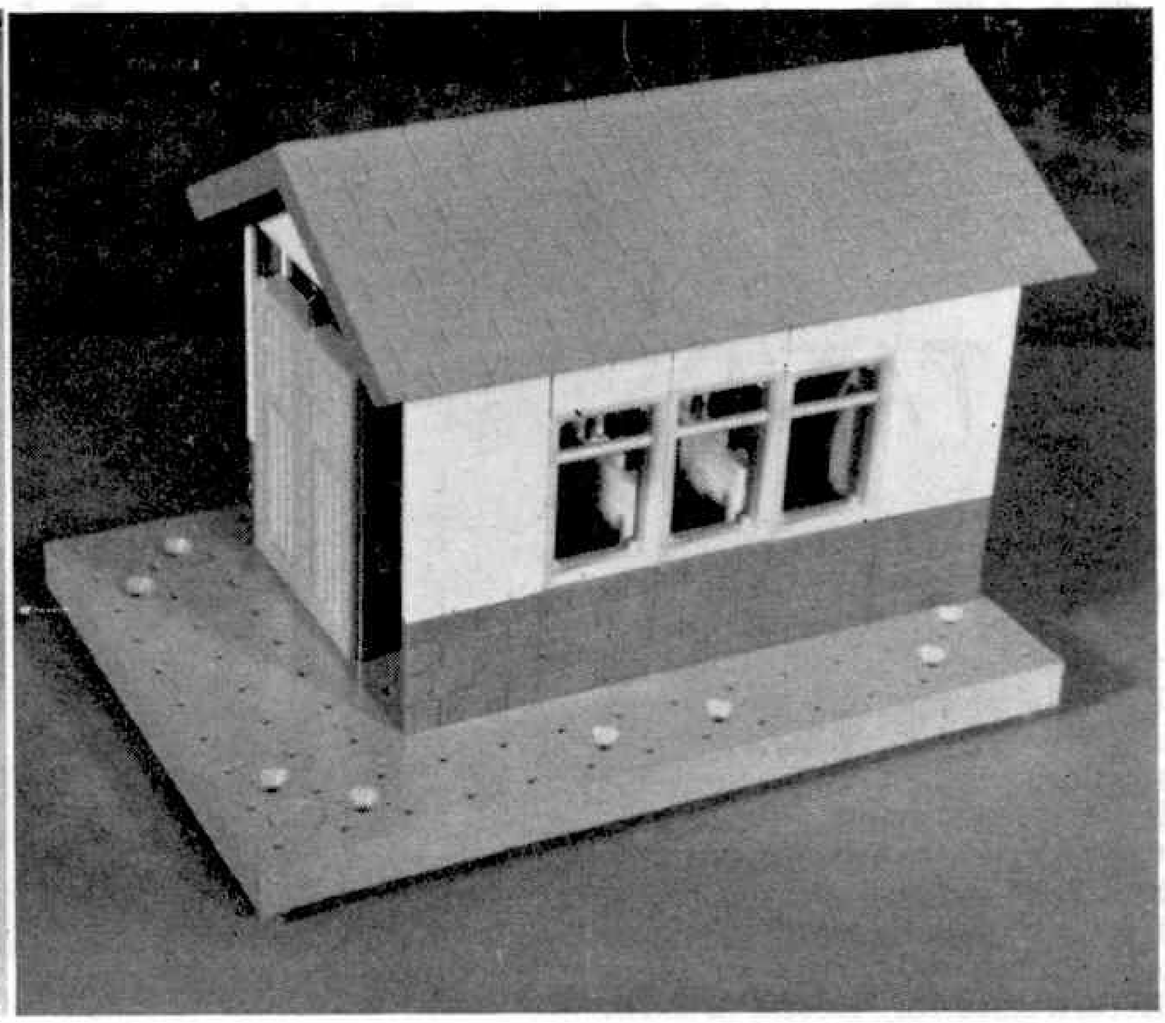
Due to the dissimilar heights of the four vehicles' front bumpers, it was not possible to arrange for them to operate from any bay, and so each engine is numbered to correspond with a particular bay, and the vehicle stops tailored to suit individual bumper heights.

The "Offices" on the Station roof contain a battery-operated alarm bell, a battery-operated warning buzzer (used in conjunction with the doors) and the internal lighting circuit.



Back view of the fire station, showing the controls.





A Milking Shed, in Bayko

"ARCHITECT" presents a model for the young builder

SO far in this series we have had models, constructed with Outfits 12, 13 and 15, all of which were based on buildings designed for use by people—namely a church, a bungalow and a public hall. In the main, these models have been built by the older constructors, which prompted me, this month, to feature something more for the "youngsters".

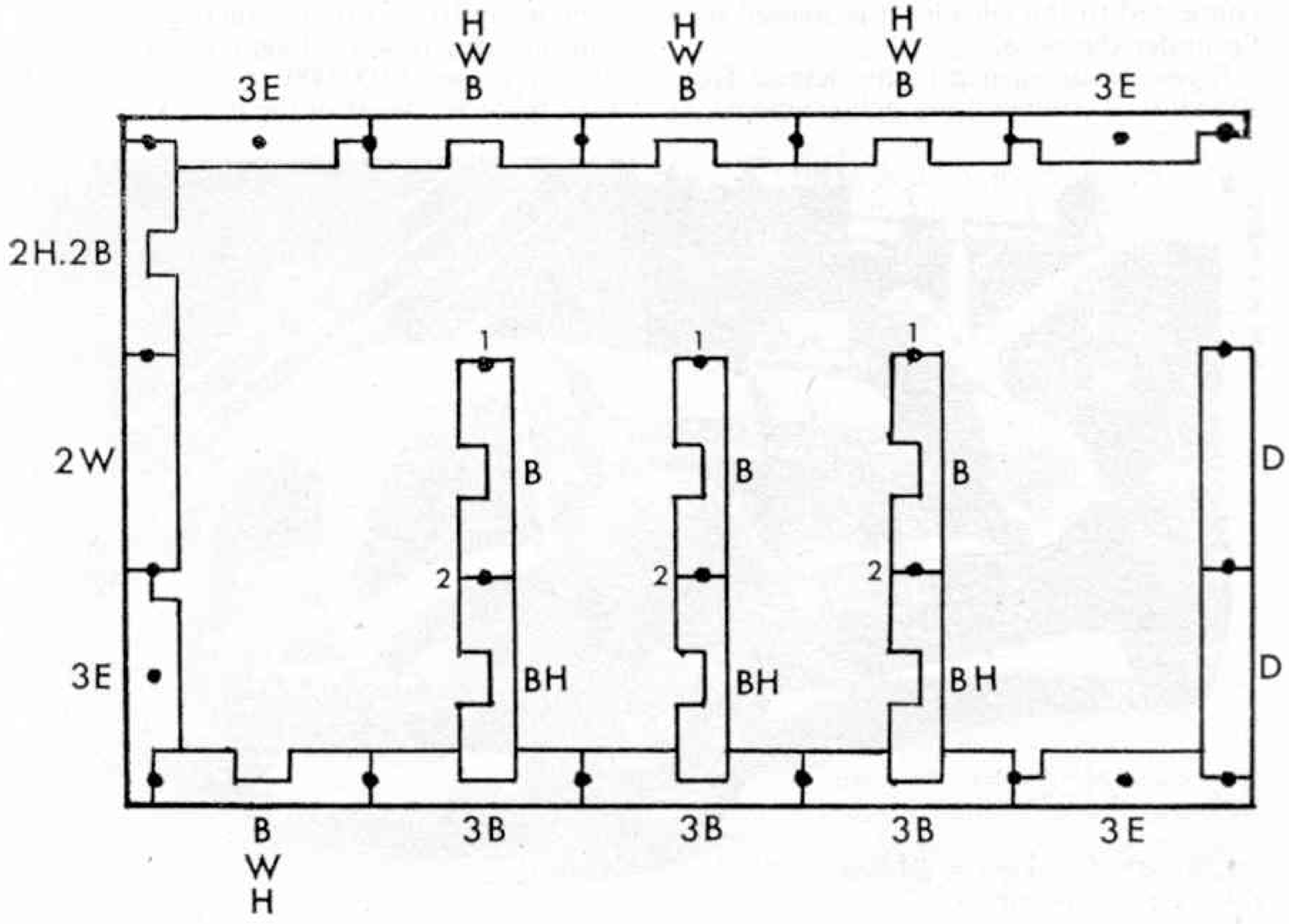
Glancing through the Instructions Manual for Outfits 11 to 14, it struck me that, although there a wide variety of subjects is covered, nothing typical of country life, and particularly of farm life, is shown. As I myself live close-to a number of farms, I felt this situation could well be remedied and so I produced the model, featured here, which fills two big gaps—it can be built by the youngest of my readers and it is based on a farm building.

Outfit No. 11 contains all the parts necessary for its construction, which is very easy, yet I am sure you will agree with me that for such a small model it is fairly well detailed. As you probably know, a milking shed is usually partitioned off into a number of cubicles in which the cows stand while being milked. Incidentally, do not imagine a line of milkmaids sitting on three-legged stools doing the milking by hand. Nowadays it it virtually all done by machines.

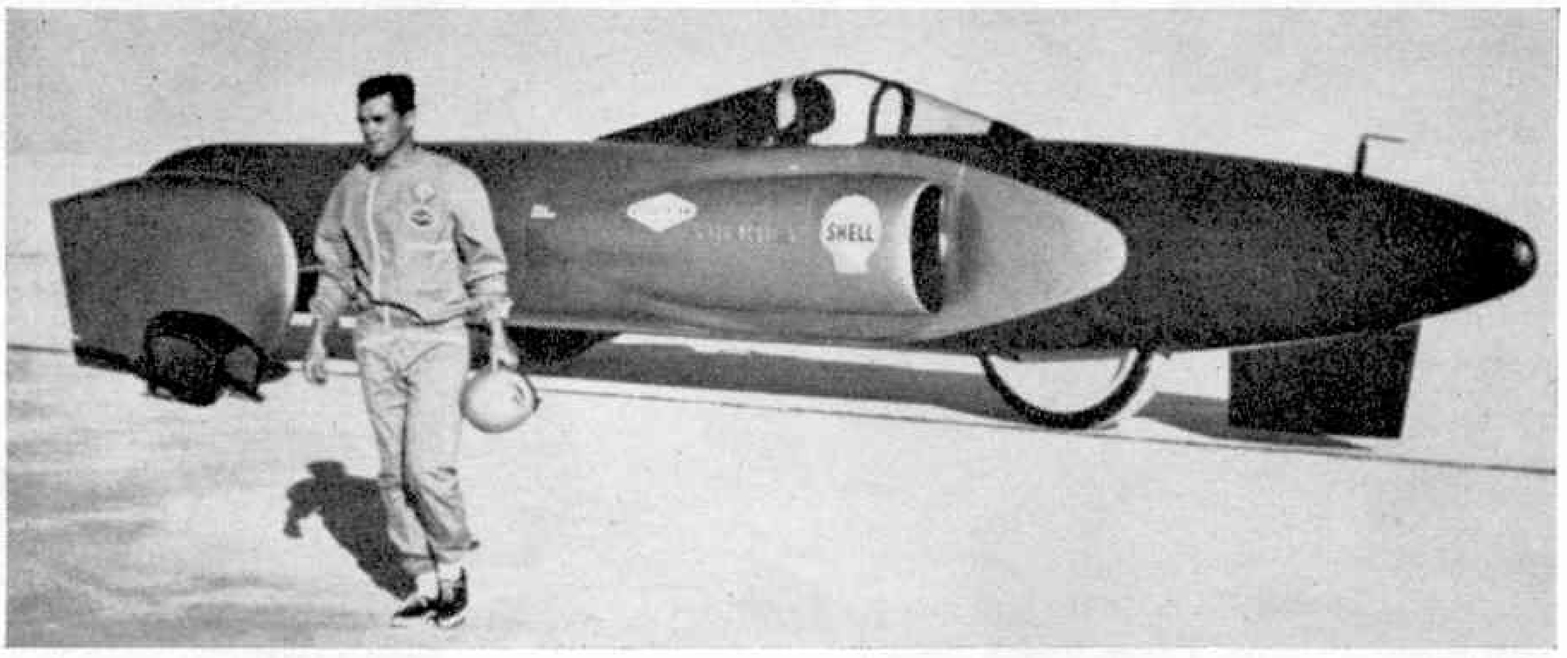
Of course, a real-life milking shed would have many more cubicles but the number of parts in the Outfit did not permit any more to be fitted into the model. It is still interesting to build, however, especially because of the interior detail, shown in the left-hand illustration above. Note particularly how the slot on the inside of the Bricks forming the wall takes the place of Rods in the construction of the partitions. You will also notice that there is a space of one Half Brick above each Door. This is intentional, as there are only 11 Half-Bricks in the Set.

PARTS REQUIRED

1 Base; 11 Red Bricks; 9 White Bricks; 4 Red End Bricks; 8 White End Bricks; 11 White Half Bricks; 3 No. 1 Brick Rods; 3 No. 2 Brick Rods; 20 No. 3 Brick Rods; 2 Doors; 6 Glazing Materials (Window); 2 Roofs, type A; 2 Roof Ends, type A; 2 Corner Ties; 5 Straight Tie Bars; 6 Windows.



OVER 400 M.P.H.—BUT COBB'S RECORD STILL STANDS



Craig Breedlove, driver and developer of the three-wheel jet car "Spirit of America", leaves the vehicle after a successful test run.

ROAD AND TRACK

By Jerry Ames

SCREAMING across the desolate Bonneville Salt Flats at a two-way average of 407.45 m.p.h., a three-wheeler recently recorded the World's Land Speed Record. It is the first time a three-wheeler has achieved this distinction and not only does its pilot, intrepid, 26-year-old aircraft technician Craig Breedlove become the first man to be officially timed at more than 400 m.p.h. in two directions, but he is also the first American to hold the World's Land Speed Record since Ray Keech, in 1928.

Officially, the World's Land Speed Record does not exist, although it has fascinated every motorist since the very first attempt in 1898. In official eyes it is only the timed record for the kilometre or mile that counts; since 1911 each attempt must be made in opposite directions to allow for wind and any inaccuracies in marking out the course.

Nowadays, there is no limit on the power or size of engine, but the F.I.A., world governing body of motor sport, insists that engines must transmit power through driving wheels, while the car must also be steered through one pair of wheels. Craig Breedlove's car does neither. His three-wheeler is jet propelled, powered by a jet engine from a B.54 bomber, with a thrust of 4,250 lbs., not connected to the wheels; it is steered by a fin under the nose.

These features in no way detract from Breedlove's tremendous achievement; as his vehicle, *The Spirit of America*, is a three-wheeler and is officially classed as a motor-cycle it is even more interesting. Craig Breedlove does not claim to have taken the late John Cobb's record, standing at 394.2 m.p.h.; indeed, he cannot, because he was not competing in the same class, but he has handsomely beaten it, his return run being covered at an average speed of 428.37 m.p.h. In the eyes of most people, it is the World's Land Speed Record that is of the greatest interest, and this he has certainly beaten with his two-way average.

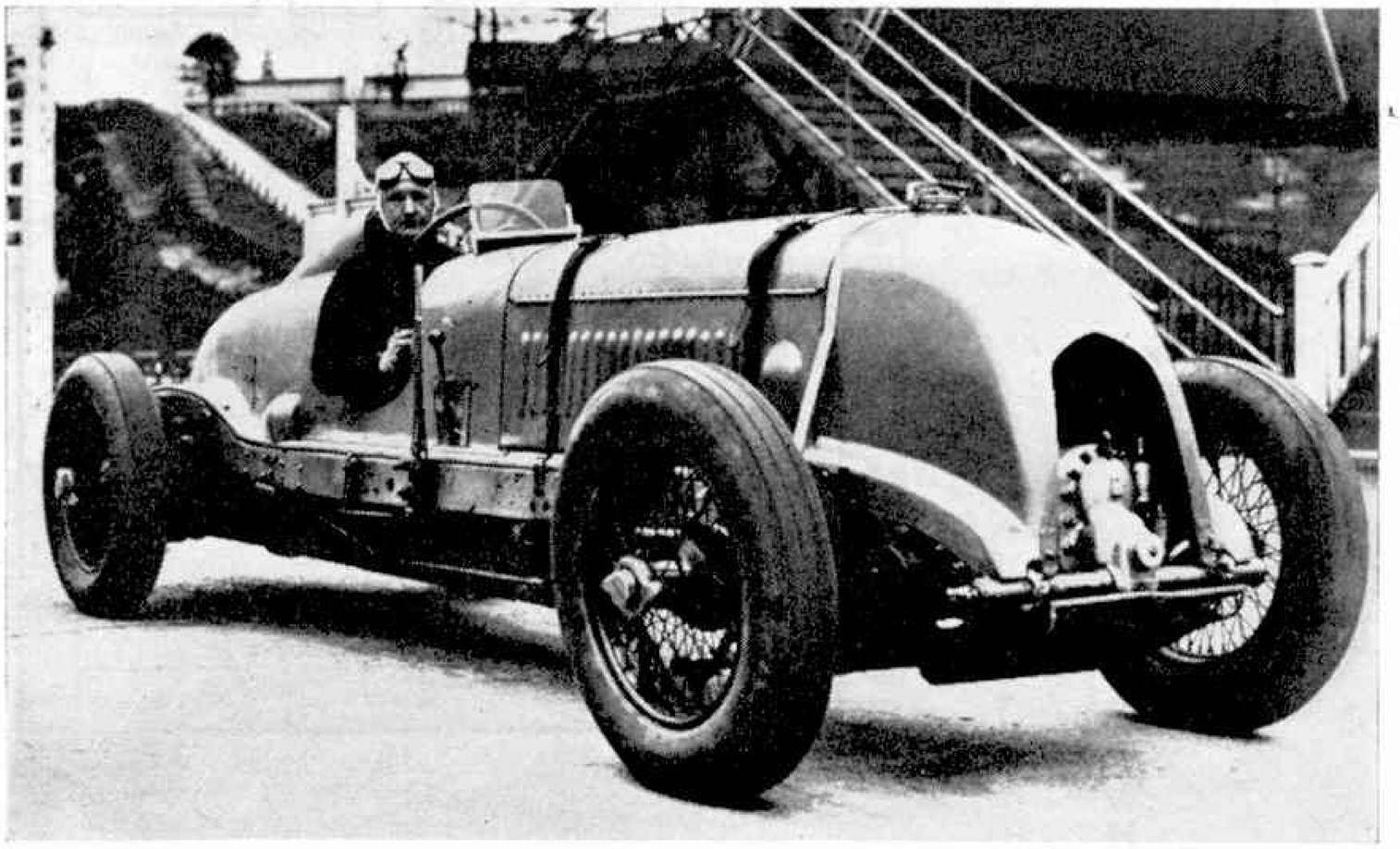
Craig Breedlove has raced hot-rods since he was fourteen, and all the time his cars have been getting faster and faster. He lives with his wife and family in Los Angeles and spends most of his spare time away from aircraft, racing dragsters. *Spirit of America* was begun two years ago and has cost £100,000 to construct and take records. Most of the money has been put up by a leading American tyre firm.

Since he is an aero technician, design of the vehicle naturally follows aircraft principles—its low drag body with central seat resembles the cockpit of a fighter and was developed after many wind tunnel tests. The reason for using only three wheels is to obtain a better streamline. The car took records up to ten kilometres in the newly-created jet car class, all being subject to official confirmation. Craig has ambitions of reaching 600 m.p.h. in the future.

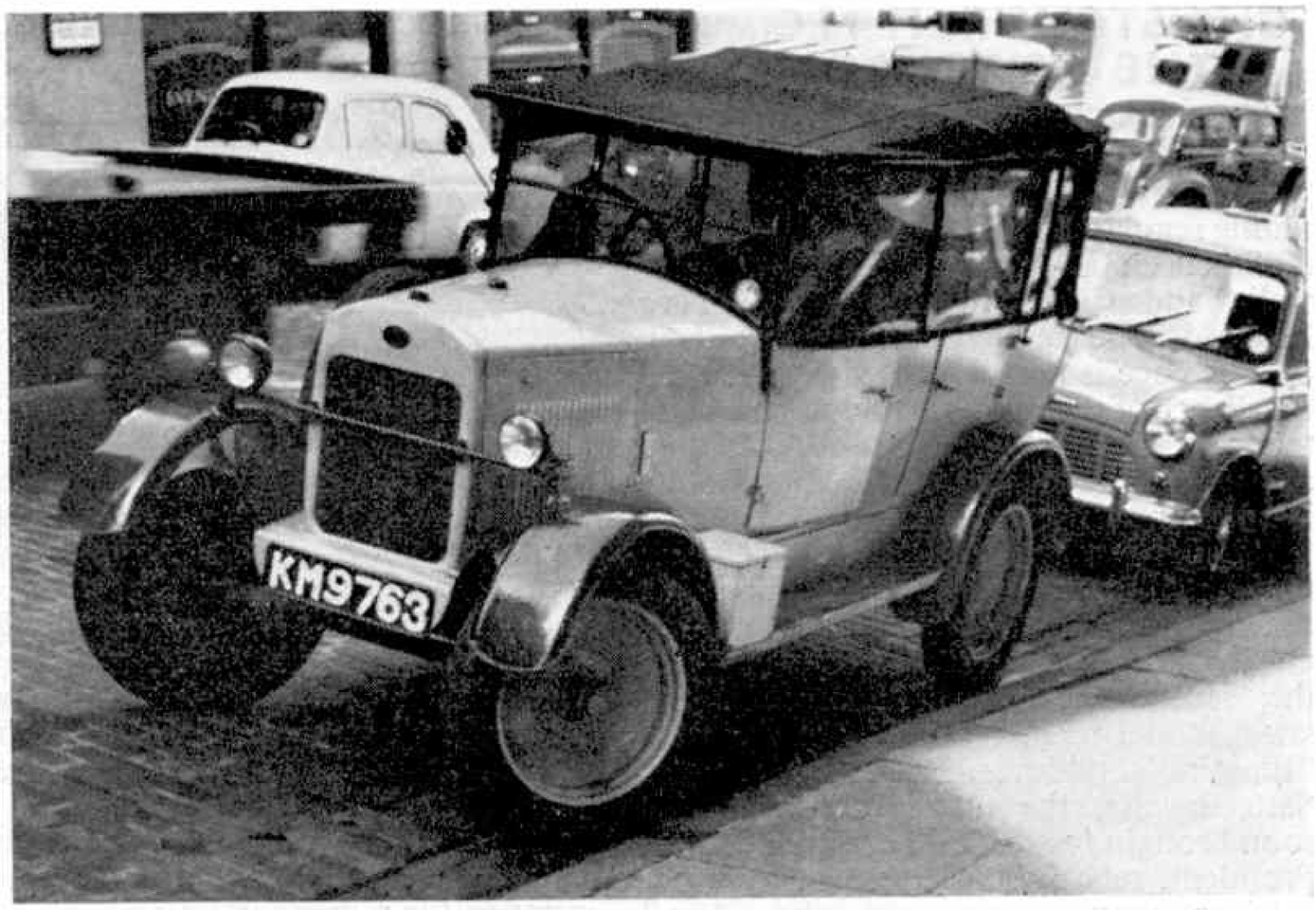
John Cobb's flying kilometre record at 394.2 m.p.h. with the Napier Railton has stood for sixteen years. Recently there have been several attempts to beat it, but without success; indeed, two drivers have lost their lives at speeds of more than 300 m.p.h. during recent years, while two years ago, at Bonneville, Donald Campbell's *Bluebird* overturned at 350 m.p.h., the driver being lucky to escape with his life.

Craig Breedlove's courageous attempt at Bonneville breaks the hoodoo which seems to have surrounded man's efforts to drive a car at more than 400 m.p.h., and becomes another important milestone in the history of speed on land.

First to exceed 100 m.p.h. on land was the Frenchman Rigolly in a Gobron-Brillié on the road at Ostend, with a speed of 103.55 m.p.h. in 1904. Two hundred m.p.h. was a target just as difficult to break, this being finally accomplished by Sir Henry Segrave in a 1,000 h.p. Sunbeam at Daytona Beach, in 1927. Sir Malcolm



Tim Birkin in the 4½-litre supercharged single-seat Bentley with which he once held the Brooklands Outer Circuit lap record, pictured in the paddock at Brooklands. Note the Brooklands regulation bonnet straps.



Above: The B.M.C. Mini-Cooper "S"-Type, a competition version of the Austin and Morris Mini-Cooper saloons but with an engine of 1071 c.c. and the Cooper-B.M.C. power unit which has been so successful in Formula Junior racing. Right: Vintage Trojan pictured in an Edinburgh street. Photograph by R. D. Stephen, of Liverpool.

Campbell, father of Donald, was the first to exceed 300 m.p.h. in 1935 at Bonneville Salt Flats. His speed of 301.13 m.p.h. marked the end of a long, and sometimes bitter, struggle against many hazards while breaking the World's Land Speed Record, which he held nine times, a feat equalled by no other driver.

Will drivers exceed 500 m.p.h. on land? It seems perfectly feasible in the near future and equally certain they will favour gas turbine engines as the main power unit. Other American drivers than Breedlove are of opinion that three wheels allow better streamlining, and a closer approach to the more perfect peardrop shape that will put speeds still higher. In fact, two brothers, Bill and Bob Summers, are planning a similar attempt with a vehicle that looks like a three-wheeler but actually has its two rear wheels in tandem to bring it into the four-wheel class. With this machine they are hoping to take John Cobb's record in the near future.

Readers who would like to know more about the attempts on the World's Land Speed Record since Chasseloup-Laubat's first attempt in 1898, when he was officially timed to cover the flying kilometre at 39.24 m.p.h., may like to read an interesting new book with foreword by the Duke of Richmond and Gordon; it is called the *B.P. Book of World Land Speed Records* and was prepared by an old friend of mine, Brian Cooper. Its price is a modest 10/6 and there are illustrations of many interesting cars that have attempted the World's Land Speed Record since the earliest days.

Brooklands Reunion

The name Brooklands conjures up for me memories of stirring duels fought on the old concrete saucer at Weybridge, of giant aero-engined monsters with cart suspension crashing over many bumps that could lift a driver four inches out of his seat, of small single-seaters and the piercing scream of their superchargers as they battled wheel to wheel, the sweet smell of Castrol "R", the rasping yowl of Bugattis, parties in the Paddock Club House, or afterwards at the Hand and Spear, Weybridge—which someone long ago rechristened "The Spike"—for I missed only three big Brooklands meetings between 1925 and its close in 1939.

So I was more than delighted when I learned that Bill Boddy, Editor of *Motor Sport*, and Dudley Gahagan, still a dyed-in-the-wool Grand Prix Bugatti enthusiast, decided to organise a reunion for all who used to regard Brooklands as a second home, whether they be drivers, mechanics, helpers or spectators. Held at "The Spike", it was an evening of chatter and of memories refreshed, and proved so successful it looks like becoming an annual event.

Several readers have written asking for more about veteran and vintage cars, and so I have suggested to the Editor that we do a brief outline of the birth and development of interesting motor cars each month. And so I am starting this month with the Trojan. I will follow this up with MG, Vauxhall, Aston Martin, Bugatti, Hispano-Suiza, Bentley and others. Meanwhile, if you really want to know what it was like racing in the early days I commend to your notice a splendid new book, *The Gordon Bennet Races*, by Lord Montagu of Beaulieu, through the pages of which you can re-capture the atmosphere and excitement of old continental town-to-town races.

KNOW YOUR CAR—No. 1
THE TROJAN

The picture you see on this page of this intriguing old war horse was taken in Edinburgh, a few weeks ago, by Mr. R. D. Stephen of Liverpool, and I would say is of the model built between 1925 and 1927, when the Trojan became almost conventional by offering pneumatic tyres as an optional extra. The Trojan, first designed in 1913, modified in 1921, went into production in 1923 as a low cost open four-seater, the car being manufactured by Leyland in Lancashire. The engine was a low-revving, 1½ litre two-stroke, connected to a two-speed epicyclic gearbox giving ratios of 4 and 12 to 1, final drive being by single duplex chain to a solid rear axle. A punt type chassis was used, but an interesting feature of the vehicle was its wonderfully flexible suspension, relying on cantilever springs. So good was this suspension the makers did not even bother to offer the option of pneumatic tyres for some years; Trojans did remarkably well in reliability trials because of their ability to climb steadily up the steepest gradients, aided by a solid rear axle and an engine that delivered plenty of power at low revolutions.

Leyland sold the design in 1928 to a firm near Croydon Aerodrome, and during the early 'thirties manufacture was concentrated largely on vans. Today, the firm of Trojan Ltd. is still going strong, but with a three-wheeler instead of the original design. The firm are perhaps better known as importers of Lambretta motorcycles and scooters. However, Trojan Ltd. of Croydon still have a very active foot in the car world, having bought the design of the 100 m.p.h. 1½ litre Elva sports car, powered by MG engines, now being manufactured at Croydon. These models are more than 50 m.p.h. faster than the original Trojan that went into production just 40 years ago.

New Mini-Cooper "S"

Even more exciting than the Mini-Cooper is the more recently introduced "S" version. It has a larger 1,071 c.c. engine of almost square dimensions, with bigger carburettors to help produce another 15 horses, totalling 70 b.h.p. net at 6,200 r.p.m.

The "S" engine is based on the BMC

(*Continued on page 447*)

WITH THE SECRETARY

Club and Branch News

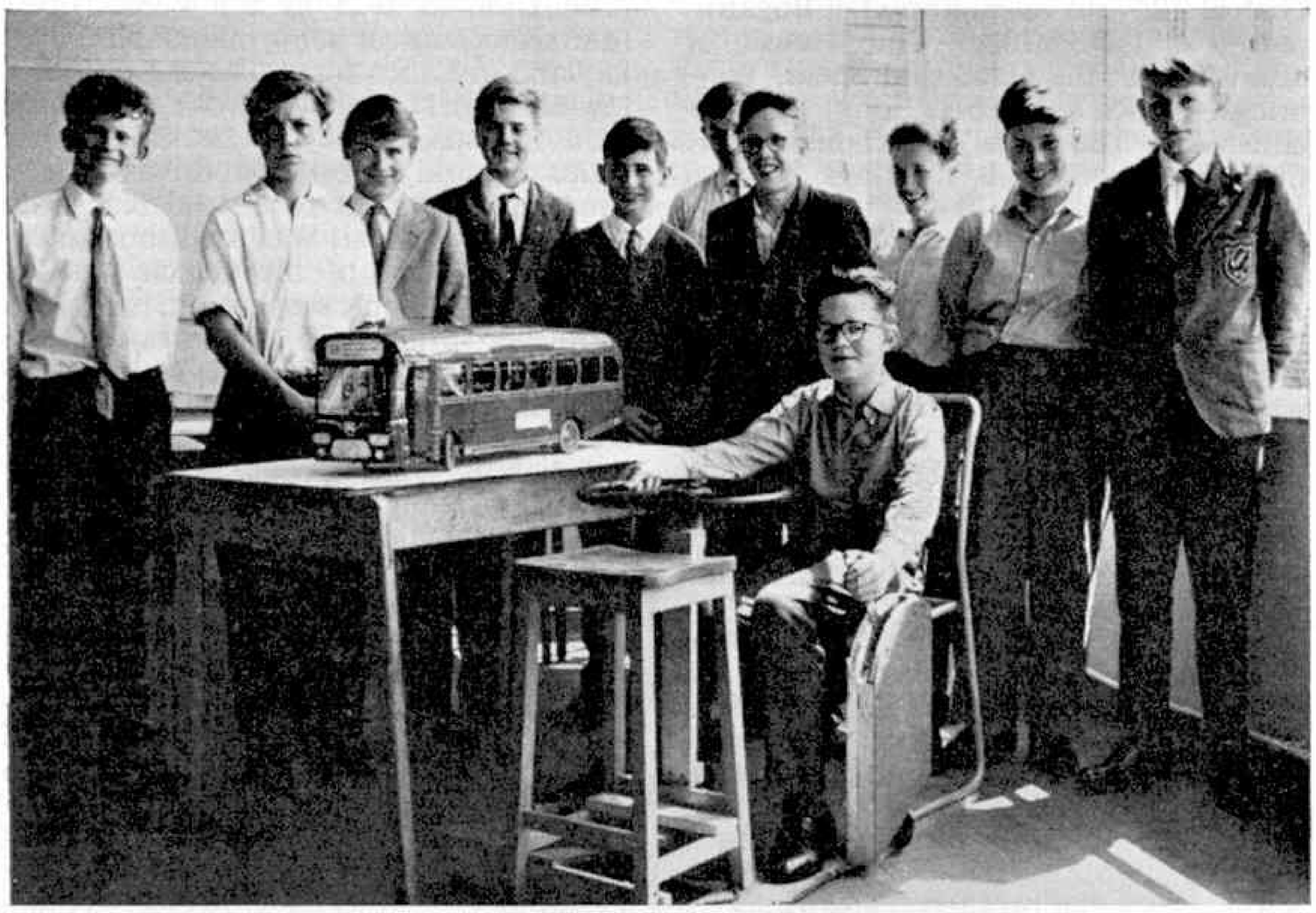
CHRISTCHURCH M.C. "IN THE NEWS" AGAIN

NOTHING in my Meccano Guild overseas mail gives me greater pleasure than the reports I receive with unfailing regularity from the two most distant affiliated clubs—Maylands M.C. of Australia and Christchurch M.C. of New Zealand. The frequent references to them on this page is an acknowledgment of the excellence of their reports and, by the same token, of the fine Meccano model-building achieved. In both clubs this great hobby is a major activity, and rightly so.

Regular readers of this page will know that Christchurch M.C. are fortunate in having available a shop window of Mr. Gay, one of their oldest members, in which they can display outstanding models. The latest model to be shown there was of a "Big Cat" bulldozer, built by Mr. Peter Satterthwaite, the club Secretary. This soon brought results, as Mr. Saunders, the President, relates in a letter just received.

"One man going past the shop" writes Mr. Saunders, "on seeing the model went in and wanted to know if it was for sale. Peter had intended to get in touch with the "Big Cat" agents in Christchurch with the purpose of demonstrating the model, but did not have to, as it happened that one of the office staff on his way to work passed the shop and spotted the model. He was so taken with it that he told his manager about it, and the latter went and had a look—and then sent a professional photographer along to take photographs of the model with the purpose of sending some to the parent office in the U.S.A." Mr. Saunders adds that this manager got in touch with Peter to arrange for a demonstration.

"Next," he writes "a visitor from the North Island came into the shop and asked Mr. Gay if he could have the model out of the window so that he could take photographs of it. He provided his own white sheet for background." Later the model was included in the club display at the annual New Zealand Industries Fair which opened in mid-August.



Members of the Weald County Secondary School M.C., of Billinghurst, with their fine model of a single-deck bus recently put into service by Southdown Motorways.

MECCANO CLUB RECENTLY AFFILIATED

WEALD COUNTY SECONDARY SCHOOL (BILLINGHURST) M.C.—*Leader:* Mr. R. Pagan, The Weald County Secondary School, Upper Station Road, Billinghurst, Sussex.

CLUB NOTES

AUSTRALIA

MAYLANDS M.C.—Some very good models are being built, and subjects completed during June were Reg. England's streamline locomotive which earned the title of "Model of the Month"; John Carter's model warehouse complete with elevators; Michael Thair's hammerhead crane (from the old Super Model leaflet), and Trevor Criddle's double flyboats complete with intermittent gear and coloured lights, which it is hoped to display in some Perth shop windows.

The boys' committee put forward some good ideas for activities during the August holidays. These included a visit to Parliament House, and a cycle run to Lermudie Falls via the old switchback railway track. A club party and a "Parents and Sons" Evening were also scheduled for the holiday period. *Secretary:* Mr. Trevor Criddle, 17 Kenilworth Street, Maylands, Western Australia.

NEW ZEALAND

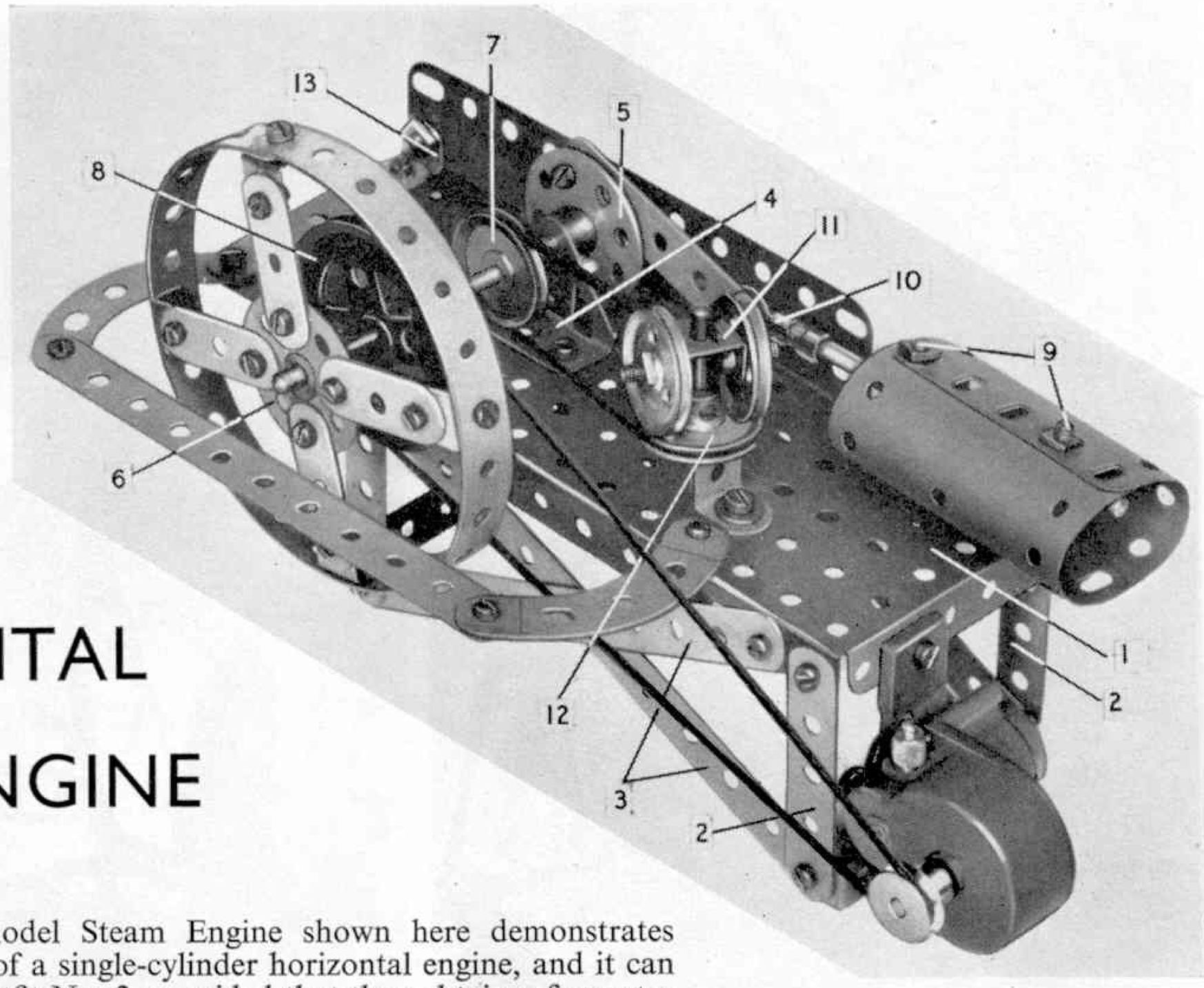
CHRISTCHURCH M.C.—Meetings have been well attended, and the high standard of model-building maintained. A Parents' Evening and Anniversary was held in June, when the 40 people who attended had an enjoyable evening of games and competitions, rounded off by a good supper provided by the mothers of the members. One competition, in which the fathers had to build a porter's barrow, gave gave rise to some amusing incidents—and produced some quite good models.

One of the junior members recently had a photograph of himself at work on a Meccano model reproduced in the childrens' section of the local newspaper, as one of the subjects in a series on "Home hobbies". The picture was accompanied by a short write-up which mentioned his club activities. *Secretary:* Mr. Peter Satterthwaite, 7 Huia Street, Riccarton, Christchurch 4, New Zealand.

EASY MODEL-BUILDING

By
"Spanner"

A SIMPLE HORIZONTAL STEAM ENGINE



THE splendid little model Steam Engine shown here demonstrates admirably the action of a single-cylinder horizontal engine, and it can be built by owners of Outfit No. 2, provided that they obtain a few extra parts, details of which are given in the "Parts Required" list at the end of this article. The model is driven by an Emebo Electric Motor.

The engine is mounted on a bed consisting of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 1, supported by four $2\frac{1}{2}''$ Strips 2, braced by four $5\frac{1}{2}''$ Strips 3 and two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips, as shown. A Trunnion 4 is bolted to the Flanged Plate 1 and in line with this a Flat Trunnion is bolted to the side flange. One of the bolts holding the Trunnion 4 in place also holds in place a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate that is used to extend the engine bed. A $3\frac{1}{2}''$ Rod is passed through the apex holes of the Trunnion and Flat Trunnion and it is fitted with an 8-hole Bush Wheel 5, a 1" Pulley 7 and a 2" Pulley 8. The flywheel consists of four $1\frac{1}{2}''$ Strips bolted to another 8-hole Bush Wheel 6. These form the spokes and they are connected to the rim by means of Angle Brackets. The rim is formed from a $12\frac{1}{2}''$ Strip carefully curved to shape as shown.

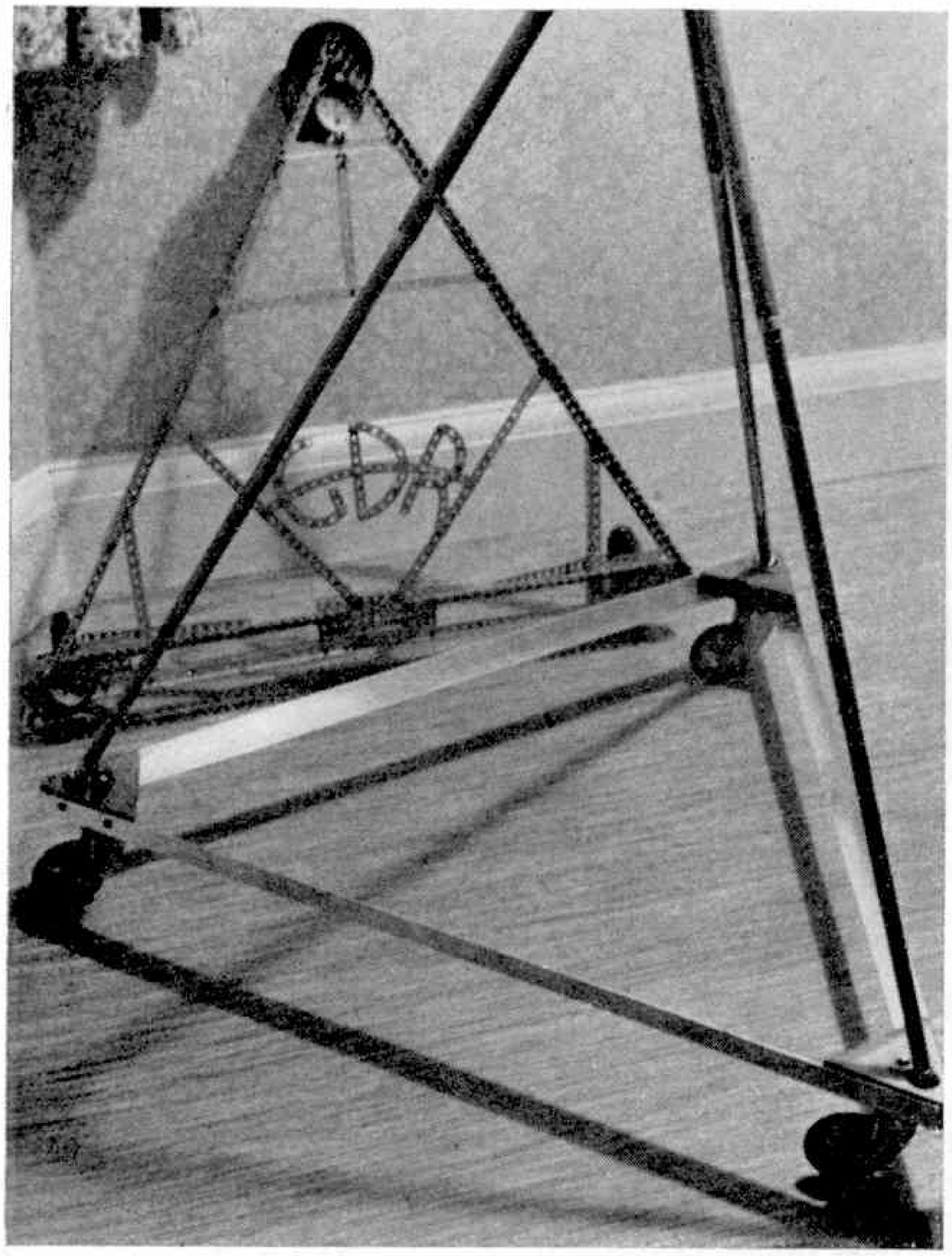
A $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Red Plastic Plate and a "U" Section Curved Plate are used to form the cylinder, and inside this are fixed by means of Bolts 9, two Angle Brackets, which form guides for the piston rod, a $3\frac{1}{2}''$ Rod. To the inner end of this Rod is fixed a Rod and Strip Connector 10 and to this a $2\frac{1}{2}''$ Strip is lock-nutted. This means that the Strip is held tightly between two nuts on a Bolt that is free to move in the hole of the Rod and Strip Connector. The other end of the $2\frac{1}{2}''$ Strip is attached to the Bush Wheel 5 as follows. A bolt is first passed through a hole in the Bush Wheel and then fitted with a nut. Then the Strip is placed on the bolt followed by a second nut on the outside of the Strip. The two nuts are then tightened up against the Strip but the Bolt must be left free to move in the Bush Wheel.

A simple governor is built up from two 1" loose Pulleys each bolted to a lug of Double Bracket 11 which is held on a 2" Rod by Spring Clips. The two Pulleys are so placed on the Rod as to rest on a 1" Pulley with boss 12. A Reversed Angle Bracket fixed to the Flanged Plate 1 forms the bearing for the 2" Rod, which is held in place by a Spring Clip fitted to it below the Plate.

The flywheel is surrounded by a guard formed from two $2\frac{1}{2}''$ Stepped Curved Strips joined by a $5\frac{1}{2}''$ Strip and on the other side of the bed a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate is bolted to Plate 1 and to Angle Bracket 13.

Finally the Emebo Electric Motor is bolted to the end of the engine bed as shown and the drive is taken from its Pulley to the 2" Pulley 8. The governor is driven by a Driving Band from Pulley 7 on the crank-shaft.

Parts required to build the Horizontal Engine: 1 of No. 1; 5 of No. 2; 4 of No. 6a; 1 of No. 11; 7 of No. 12; 2 of No. 16; 1 of No. 17; 1 of No. 20a; 2 of No. 22; 2 of No. 22a; 2 of No. 24; 4 of No. 35; 46 of No. 37a; 40 of No. 37b; 4 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 4 of No. 111c; 1 of No. 125; 1 of No. 126; 1 of No. 126a; 1 of No. 186a; 1 of No. 186b; 1 of No. 189; 1 of No. 190; 1 of No. 194a; 1 of No. 199; 1 of No. 212; Emebo Motor.



MECCANO AND THE MOVIE-MAKER

MANY owners of Meccano Sets find them useful in later life in connection with their work or hobbies, long after the early flush of schoolboy enthusiasm has passed. My Meccano Outfit, dating from the nineteen-thirties, came in

By

GORDON D. ROWLEY,

of "Cactus Polonaise" Fame

for a new lease of life (and a much-needed coat of paint) four years ago when I took up amateur movie-making. As a botanist I wanted to make time-lapse studies of plant movements, and Meccano came to my aid with a reduction gearbox and camshaft to trip the light switch and camera at pre-set intervals.

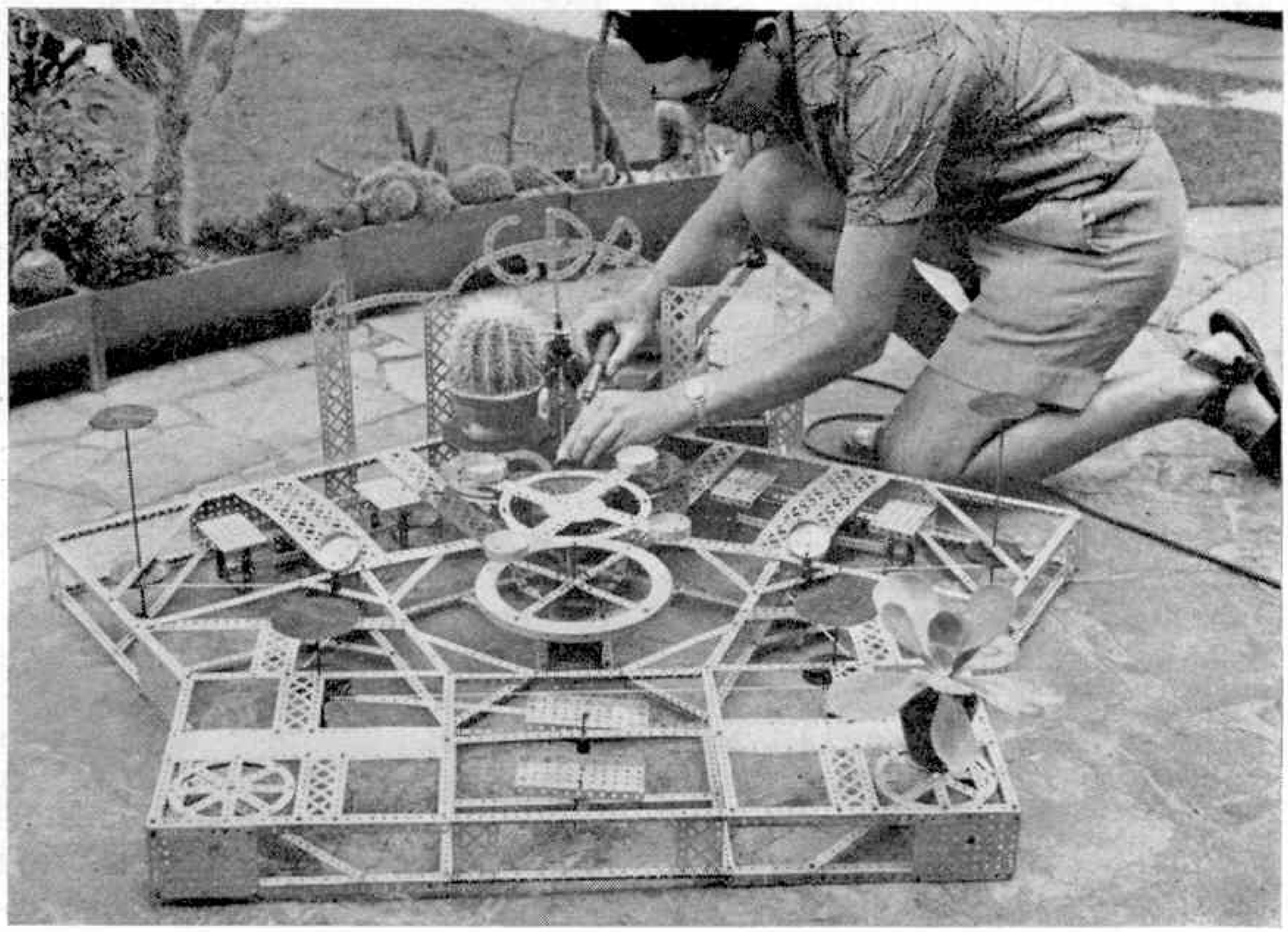


Fig. 1. (Top left) A camera tripod dolly developed from a Meccano prototype. Fig. 2. (Top right) Gordon Rowley tracks in on a rotating "star". This is one of several animation stages built for "Cactus Polonaise". Fig. 3. (Foot of page) Gordon Rowley sets up an animation stage for cacti.

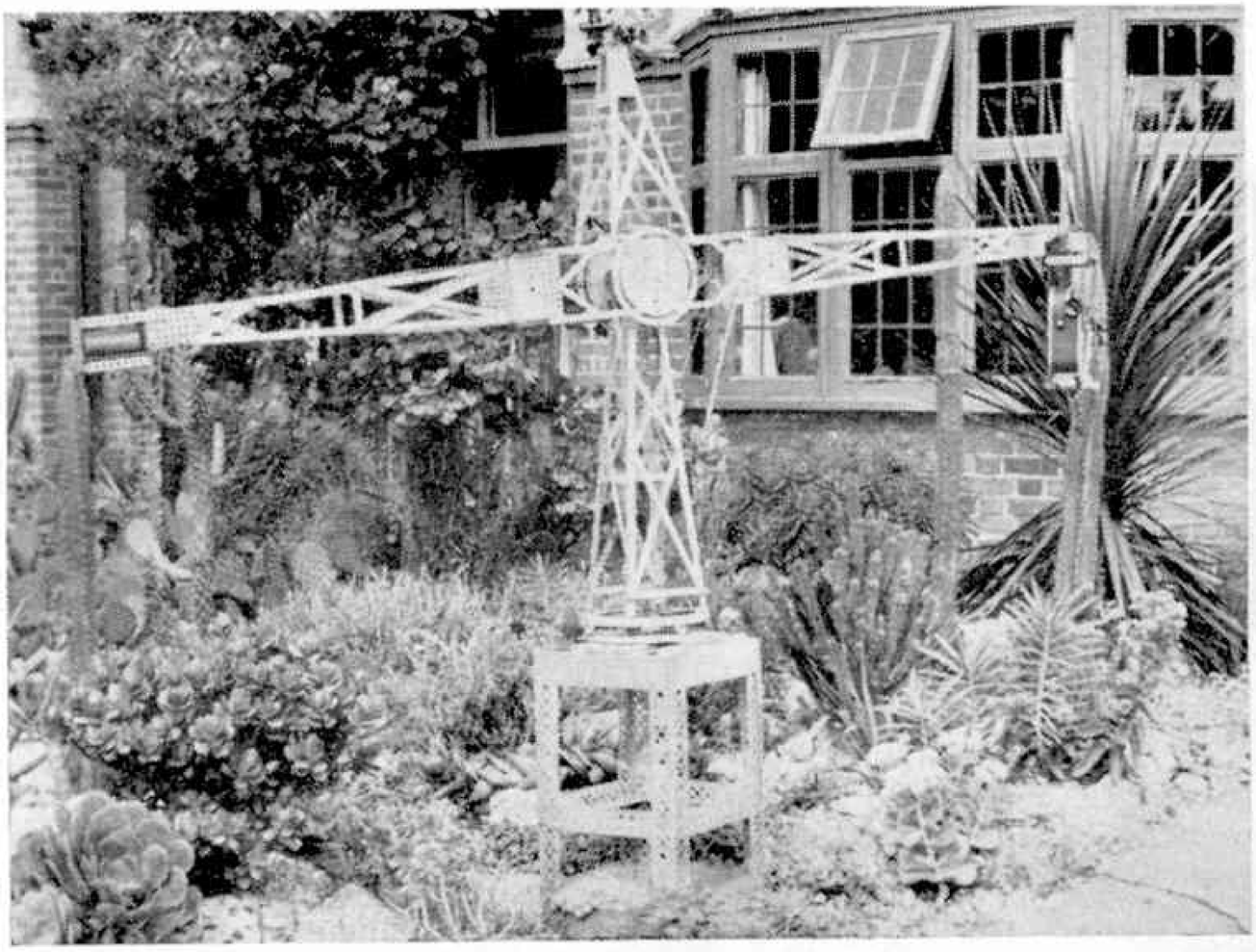
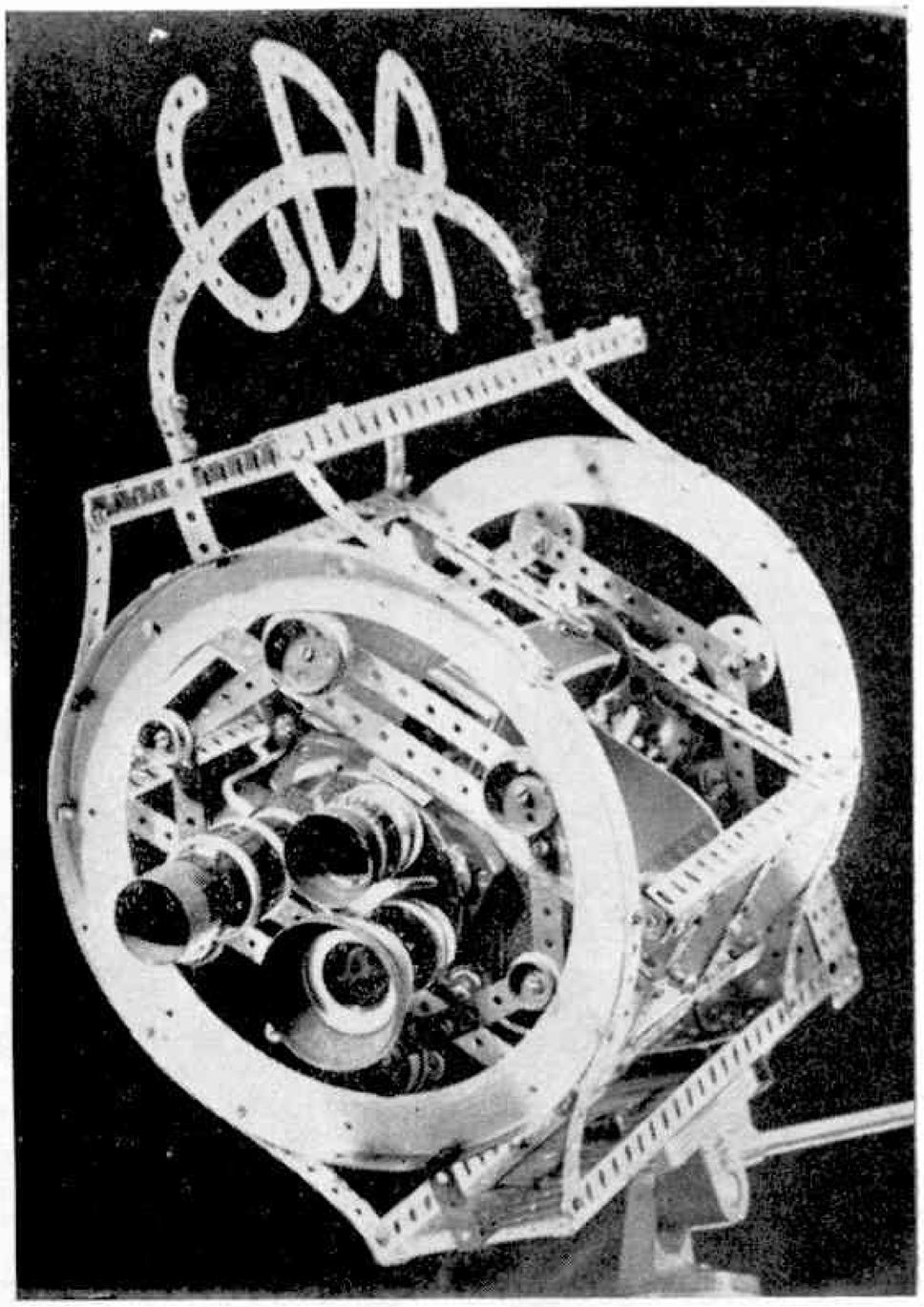


Fig. 4. A camera crane for filming a long tracking shot through a "desert garden". The camera is exactly counterpoised by lead weights.

Next, I wanted some way of moving a cine camera for smooth tracking shots down corridors. The camera dolly in Fig. 1, which holds a tripod leg in each corner, was the outcome of several experiments with Meccano, one of which can be seen in the background. But the biggest scope came with the urge to try some animation. For "Cactus Polonaise", I wanted to make the contents of my glasshouse dance to the music of Tchaikovsky. Perhaps you imagine that cacti are too solid and portly to train as ballerinas —but it can be done, with a moving camera, moving plants—and Meccano.

Various animation stages were built on which pots could be rotated, tilted or lifted (Figs. 2, 3 and 7). Not all were successful: a smooth movement free of jerks demands a very rigid frame and minimum of backlash. Prior to shooting, all the machinery had to be shrouded in black paper or velvet to give a neutral background.

Fig. 5 shows a gadget for turning a camera about an axis running through the lens, suggesting rotation of the whole scene photographed. (My friends christened this one Rowley's Cameralurch Attachment, from the ease with which it made them seasick if used too often!) (*Cont. on p. 447*)



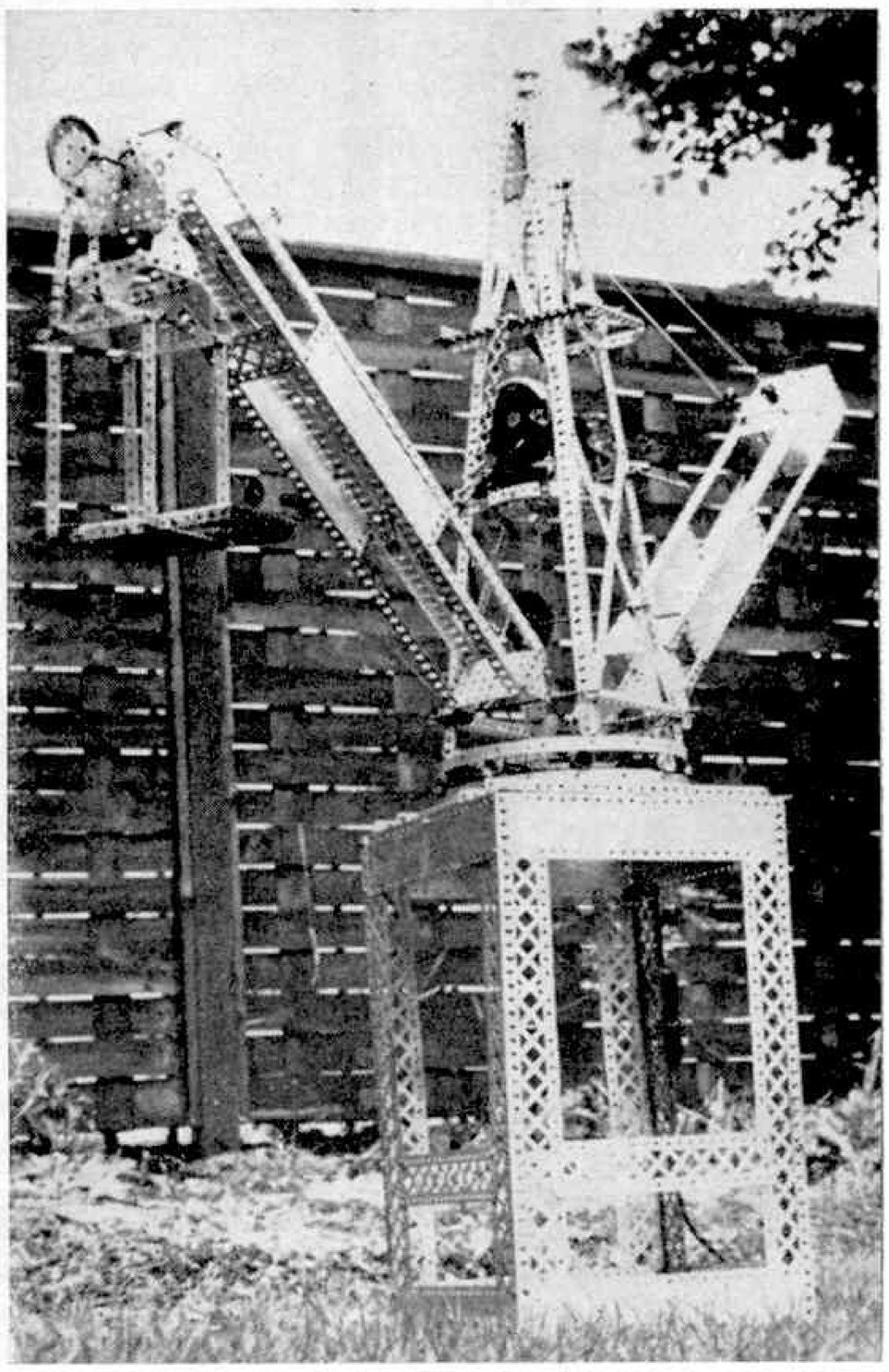
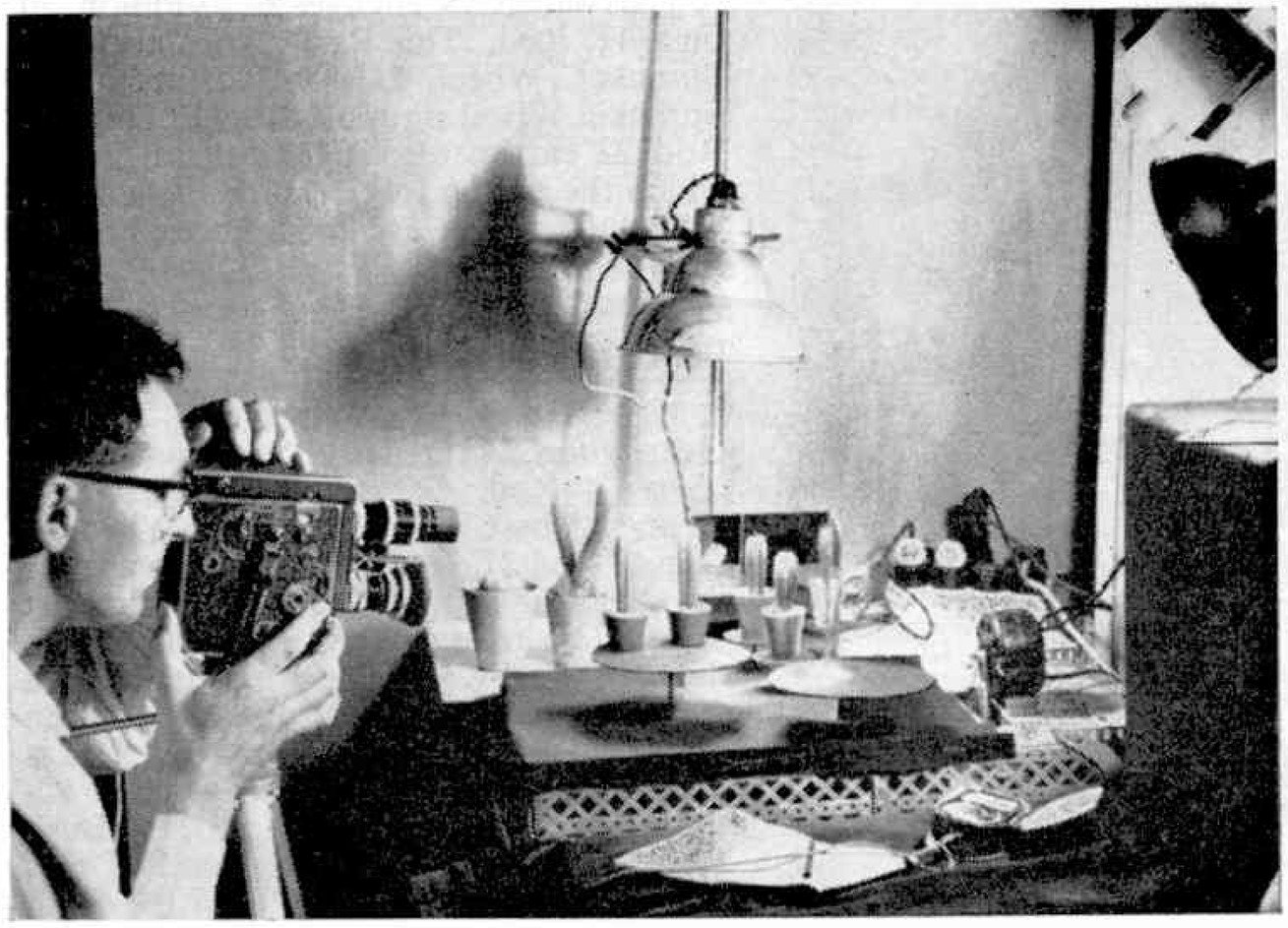


Fig. 5. (Top right) A device for rotating a camera about the lens. Fig 6. (Bottom right)A simple type of camera crane. Here the camera can be tilted by remote control. Fig. 7. (Below) Filming cacti rotating on turntables. Black paper conceals the mechanism.



"Spanner" Describes

AN INTERESTING BRAIDING MACHINE

WILL PLAIT THREE STRANDS OF COTTON

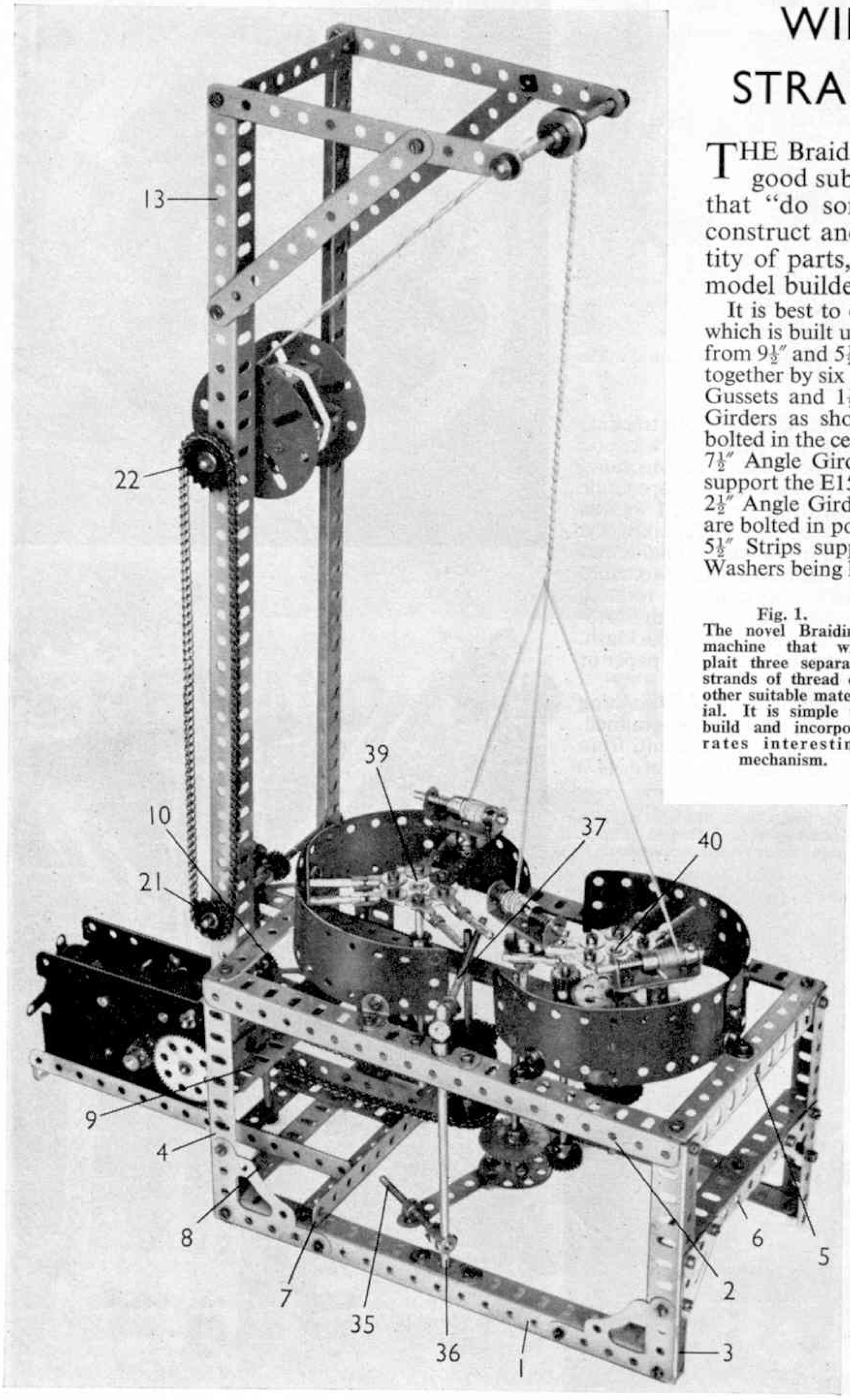


Fig. 1.
The novel Braiding machine that will plait three separate strands of thread or other suitable material. It is simple to build and incorporrates interesting mechanism.

THE Braiding Machine shown in Fig. 1 makes a good subject for those who like to build models that "do something," and as it is quite easy to construct and does not require an excessive quantity of parts, it should have a wide appeal among model builders generally.

It is best to commence construction with the framework, which is built up as follows. Two rectangular sides are made from 9½" and 5½" Angle Girders 1, 2, 3, and 4 and then joined together by six 5½" Angle Girders 5, 6, 7, 8, 9 and 10. Corner Gussets and 1½" Corner Brackets are bolted to the Angle Girders as shown. Two 9½" Angle Girders 11 and 12 are bolted in the centre of the Angle Girders 5, 10 and 6, 9. Two 7½" Angle Girders attached to the Angle Girders 7 and 8 support the E15R motor, and are connected at the front by a 2½" Angle Girder. Now the 18½" Angle Girders 13 (Fig. 1) are bolted in position. Attached to their upper ends are four 5½" Strips supporting a 4" Rod carrying a ½" Pulley, ¾" Washers being held against the sides of the Pulley by Collars.

MOTOR DRIVE

A ½" Pinion on the armature shaft of the Motor drives a 57-tooth Gear on a 2½" Rod carrying a ¾" Pinion that engages with a 50-tooth Gear 14 secured to a 2½" Rod. On this Rod is also fixed a Worm 15, which drives a 57-tooth Gear 17 on a 6½" Rod 16 journalled in two Trunnions and a 2½" Strip. On this Rod is fixed also a Worm 19, and a 1" Sprocket Wheel 18.

TAKE-UP DRIVE

The Worm 19 engages a ½" Pinion 20 on a 4½" Rod. This Rod carries also a ¾" Sprocket Wheel 21 that drives a 1" Sprocket Wheel on a 4½" Rod 22 (Fig. 1). Rod 22 carries also a built-up drum on which the cotton to be braided is wound. Two face Plates are bolted together by four 1½" × ½" Double Angle Strips to form the drum.

BRAIDER HEAD DRIVE

Now fix a 1" Sprocket Wheel 23, a 1" Gear wheel 24, and a 1" Sprocket Wheel 25 to a 4" Rod. Connect Sprocket Wheels 18 and 25 by Chain. A 1" Gear Wheel 26 on a 4" Rod 27, is now arranged to engage the 1" Gear Wheel 24. A 1" Sprocket Wheel 23 is used to drive a similar one on the 4½" Rod 28, which also carries a 57-tooth Gear that drives a ½" Pinion on the 4½" Rod 29. At the end of this Rod is fixed a ¾" Pinion 30, that engages a 50-tooth Gear 31 on a 4½" Rod 32. A Bush Wheel 33 is fastened at the end of this Rod and on a Threaded Pin in the Bush

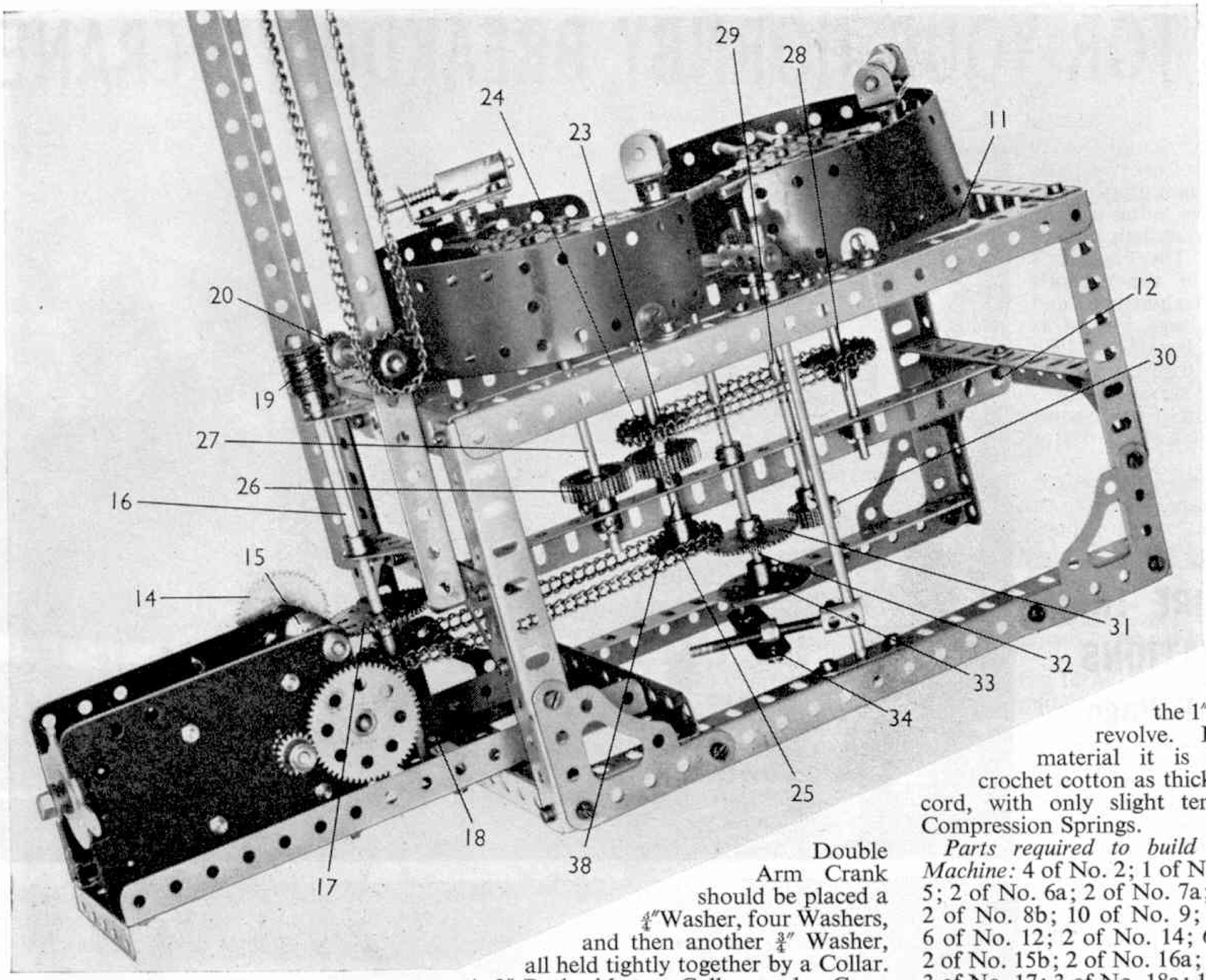


Fig. 2. A side view of the Braiding machine showing the gearing that operates the braider heads.

Wheel a $2\frac{1}{2}$″ Strip 34 is pivoted, and its other end is attached to a Flexible Coupling Unit 35 by a Bolt screwed into a Collar. A Short Coupling fixed to a $6\frac{1}{2}$″ Rod 36 holds the Flexible Coupling Unit as shown. A Coupling carrying a 3″ Rod 37 is fixed by two Grub Screws to the $6\frac{1}{2}$″ Rod 36. The Short Coupling now has to be adjusted so that as the Bush Wheel rotates the 3″ Rod 37 (Fig. 1) is moved evenly from side to side, pressing slightly on the Rods 29 and 38.

THE BRAIDER HEADS

Two Bush Wheels 39 and 40 each have six Rod and Strip Connectors bolted to them. These are so arranged as to form three pairs. Each Rod and Strip Connector holds a 1″ Rod. When the Rods 27 and 28 are rotated the 1″ Rods on one Bush Wheel should nearly touch the Rods on the other Bush Wheel, and at the same time they should be dead level and in perfect alignment. All three pairs of Rods should be carefully checked and adjusted to ensure this by bending the Rod and Strip Connectors as necessary.

BOBBIN HOLDERS

A $1\frac{1}{2}$″ × $1\frac{1}{2}$″ Double Angle Strip should now be bolted to a Double Arm Crank. On a $1\frac{1}{2}$″ Rod secured in the boss of the Double Arm Crank should be placed a $\frac{3}{4}$″ Washer, four Washers, and then another $\frac{3}{4}$″ Washer, all held tightly together by a Collar. A 2″ Rod with two Collars and a Compression Spring are placed in the lugs of the Double Angle Strips. The Collars are fitted with 7/64″ Grub Screws.

TIMING THE MACHINE

The braider head 39 revolves in a clockwise direction. To "time" the mechanism, which is necessary to ensure correct functioning, place a bobbin holder between a pair of 1″ Rods when they are about "five past the hour," keep turning slowly and when the 2″ Rod of the bobbin holder has just passed the end of the Rod 37, the Bush Wheel 33 must be so adjusted as to start moving the Rod 37. At this stage the other braider head will be moving in an anti-clockwise direction so that the bobbin holder will be pushed from braider head 39 to braider head 40 by the Rod 37. Now place another bobbin holder in the braider head 40 and likewise the Rod 37 will push this over to braider head 39. Repeat again by putting the third bobbin holder in the braider head 39.

Before running the machine attach two $5\frac{1}{2}$″ × $1\frac{1}{2}$″ Flexible Plates to the Angle Girders forming the top of the bed with Angle Brackets. The Plates should clear the ends of the 1″ Rods by about a $\frac{1}{4}$″. These Flexible Plates keep the bobbin holders on the 1″ Rods as they revolve. For braiding material it is best to use crochet cotton as thick as Meccano cord, with only slight tension on the Compression Springs.

Parts required to build the Braiding Machine: 4 of No. 2; 1 of No. 3; 2 of No. 5; 2 of No. 6a; 2 of No. 7a; 6 of No. 8a; 2 of No. 8b; 10 of No. 9; 1 of No. 9d; 6 of No. 12; 2 of No. 14; 6 of No. 15a; 2 of No. 15b; 2 of No. 16a; 1 of No. 16b; 3 of No. 17; 3 of No. 18a; 12 of No. 18b; 1 of No. 23; 1 of No. 24; 2 of No. 24c; 2 of No. 25; 3 of No. 26; 2 of No. 27; 3 of No. 27a; 2 of No. 31; 2 of No. 32; 106 of No. 37a; 106 of No. 37b; 34 of No. 38; 8 of No. 38d; 7 of No. 48; 29 of No. 59; 3 of No. 62b; 1 of No. 63; 1 of No. 63d; 1 of No. 94; 5 of No. 96; 1 of No. 96a; 4 of No. 108; 2 of No. 109; 1 of No. 115; 3 of No. 120b; 2 of No. 126; 4 of No. 133; 1 of No. 175; 4 of No. 189; 12 of No. 212; 1 EI5R Motor.

JOBS FOR YOUR HORNBY BREAKDOWN CRANE

MINIATURE TRAIN FORMATIONS

By S. F. Page

THE Hornby-Dublo 4620 Breakdown Crane, with its Match Truck, has much more operative value on any 00 gauge layout than at first may appear. The Engineer's Department of the author's Longdon, Newborough and Easthyde Railway, known as the L.N.E.R., has one of these cranes which forms a part of the engineers' train, the overall composition of which must vary according to the work to be done.

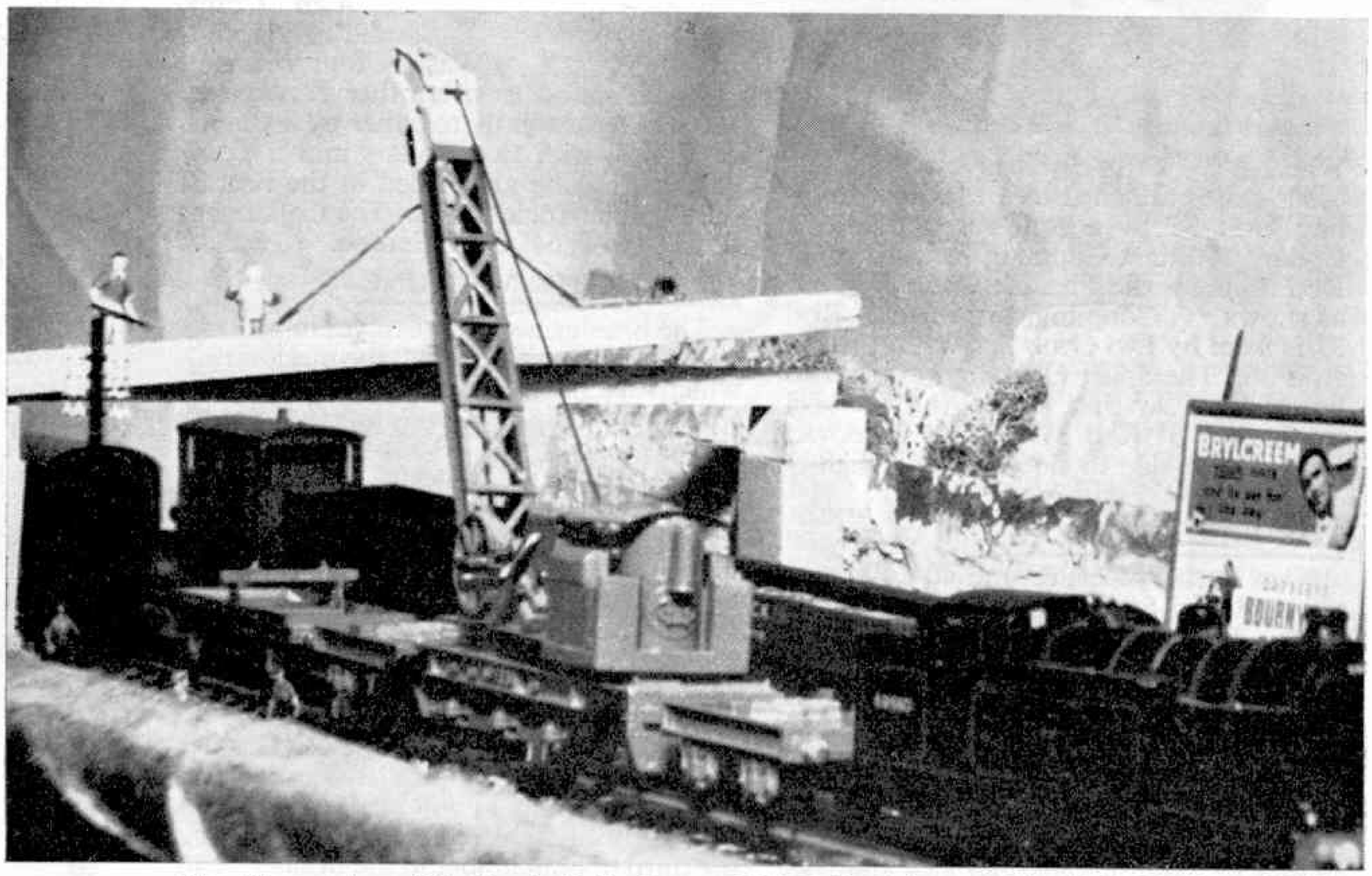
First, each time the track is extended, or repairs have to be made, such as the lifting of uneven track, the crane is employed together with engineers' staff coaches, an open truck with ballast and a guard's van. Where new track is being laid, a second train of 4610 Bogie Bolster Wagons brings in new lengths of track, while, in the case of new track laying, a third train brings in a number of 4670 or 4655 open Wagons loaded with ballast.

More frequently the crane is employed in lifting and maintaining track, or renewing short lengths, and for this the train consists of the crane, an engineers' coach (this is normally one of the older Hornby-Dublo suburban stock coaches) and a 4318 Packing Van with a Brake Van at the rear.

All too frequently for the good of the timetable operated on this layout the crane is called out to re-rail errant wagons and very occasionally, coaching stock, but happily it has not, so far had to clear away the results of a collision. (What a dull railway!)

These are the normal requirements this crane model has to deal with, but there is another use which is not so commonly practised on railway layouts and yet is part of the vital working. Most of the bigger civil engineering works associated with railways require the use of a crane—one such example is the building or strengthening of a bridge over the tracks. The prototype of the Hornby-Dublo model has been seen regularly on the Euston–Crewe line, where it has been necessary to raise bridges to accept the overhead wiring for the new electrification

(*Continued on page 447*)



Top: The prototype of the Hornby-Dublo Crane and Match Truck is seen raising the height of a road bridge by lifting concrete spans and placing them in position on existing bridge supports. Below: The Hornby-Dublo Breakdown Crane lifts a "concrete beam" on to a road bridge which was constructed on the author's two-rail layout during recent expansion. The crane is hauled by an 0–6–2 Tank Locomotive.

Here are two of the new No. 4644 21-ton Hopper Wagons described on this page. One of the vehicles is appropriately loaded with imitation ballast.

New Hopper Wagon—And A Six-Wheeled Brake Van

ALL 00 Gauge railway owners will welcome the two most recent additions to the Hornby-Dublo range announced this month. They are No. 4644 21-ton Hopper Wagon, and No. 4076 Six-Wheeled Passenger Brake Van, pictures of which you see here.

No. 4644 21-ton Hopper Wagon represents a British Railways' standard design of this type of vehicle. In real life hopper wagons have many uses, more particularly in connection with coal and mineral traffic, and there is no doubt that many uses will be found on miniature layouts for this attractive reproduction. The general shape of the vehicle is clearly shown in our upper photograph, the lower section of the bodywork being made to slope inward towards the two hoppers, which in the real thing are provided with doors for the bottom discharge of the load. This operation takes place when the loaded wagons are run over a gantry structure, such as is found in many industrial installations, for unloading purposes.

The Hopper Wagon introduces an attractive new "shape" in wagons and the fact that the bodywork is formed by a plastic moulding process means that there has been ample opportunity for reproducing characteristic details of the real thing. Thus the top edges of the bodysides and ends reproduce the stiffening angles found on the real thing. In addition there are vertical stanchions that help to support and stiffen the real body plates, while the triangular gusset plates at the ends add to the character of the Wagon.

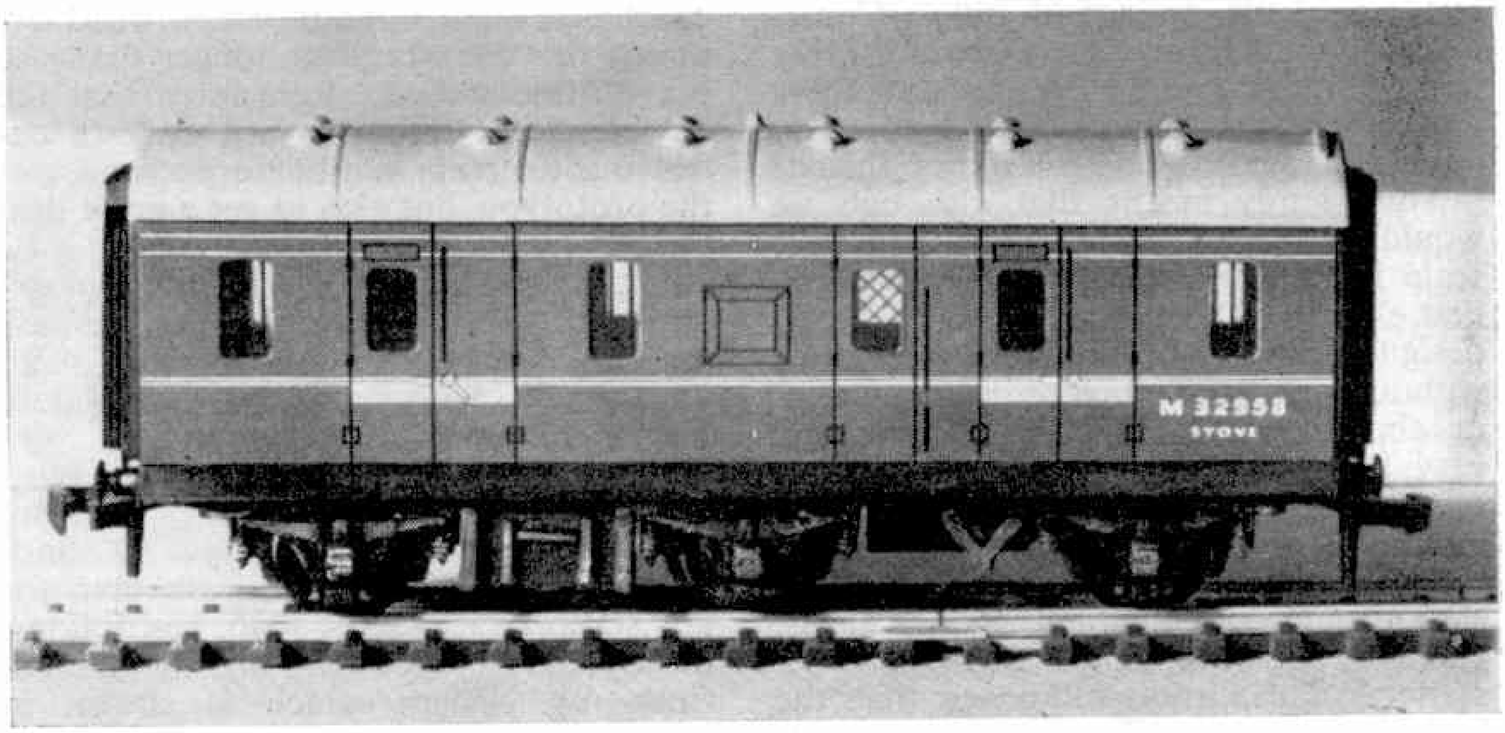
The base of the model represents accurately the construction of the real underframe with its channel-section solebars and businesslike axleguards on which are represented the roller bearing axle boxes and springs. Standard Hornby-Dublo disc-type nylon wheels are fitted so that the free-running of the model is ensured. Dummy brake gear is provided in fine detail, the V-hangers, rods and levers being fretted out, as it were, and not merely shown in relief against a solid background.

A change in detail that is important from the maintenance point of view is that the Hornby-Dublo automatic couplings are fitted not with pressed rivets but by means of moulded plugs. Owing to their special form these are removable so that coupling renewal when necessary becomes a relatively simple business. Each plug has a wide head. When this is prised up by means of a penknife blade or something similar the plug can be withdrawn from its socket. When the plugs are replaced they snap into position and hold the couplings firm.

The body-work is finished in B.R. wagon grey with white lettering and marking on the usual black patches on the wagon sides.

Now for No. 4076 Six-Wheeled Passenger Brake Van. This strikes a distinctive note, for it is actually the first passenger-type vehicle in Hornby-Dublo to be mounted on six wheels. Its design and construction are in keeping with the standards now usual in Hornby-Dublo coachbuilding. The bodysides and base are of metal, while the detailed roof ends and underframe are formed of plastic mouldings. The windows are "glazed" with transparent plastic and opposite cer-

(*Continued on page 446*)



The principal features of No. 4076 Six-Wheeled Passenger Brake Van are well shown in this picture.

DESIGNING MINIATURE STATION LAYOUTS

This simple Western Region station layout forms the basis of one of the Hornby-Dublo schemes discussed in this article. Photograph by N. Ewart Mitchell.

SINCE my article in the August *M.M.* appeared, I have received many letters from readers requesting me to illustrate prototype station plans to scale, with perhaps a few notes on each one. I have thought it more generally useful, however, to deal with two prototype station plans and to indicate with the aid of some drawings and a photograph how they may be modified for use in miniature.

The greatest difficulty when attempting to reproduce, in miniature, a full-size station is lack of space, particularly in view of the length of platforms. This space problem is encountered in many other branches of model railway work. The Engineer of a Hornby-Dublo railway must remember that in 00-gauge a length of 69 feet represents an actual mile. Consequently, a miniature King's Cross or other large terminus would occupy something like the area of a tennis court before you were able to go beyond the station throat!

This simply means that although we would all like to model stations to their scale length it is just not possible. The first essential, therefore, is to simplify the design and layout of the station concerned without losing too much of its appearance or character. Although this may seem easy, it does in fact call for a fair amount of thought.

For instance, station platforms will be reduced in length proportionately with the station, and so will sidings, goods yards, back-shunts, and other features of a station. This, in turn, means that the lengths of trains are also affected, both passenger and goods. It is not uncommon for a fourteen-coach train to leave one of the main line termini in London, or the provinces. But it is highly unusual for a fourteen- or even twelve-coach train to be run regularly on a 00-gauge railway. All this means that the builder must be satisfied with shorter trains, which are more in keeping with the type of station that is to be constructed. Some prefer to see a tank locomotive and a three-coach train, running on an almost scale length "branch" line, but others are happier to run a Pacific type locomotive with three coaches or so in and out of a crowded terminus that may be little longer than the branch line station. Remember that the object of our hobby is not only to endeavour to create in miniature a replica of the prototype, but also to get a great deal of enjoyment out of it.

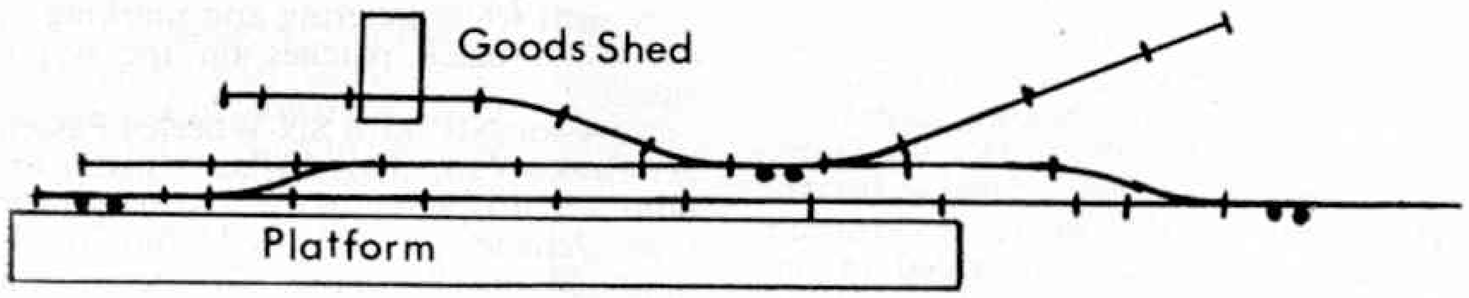


DIAGRAM 1

Let us look first at the photograph above, showing a very simple station having only one platform and a goods shed, and a staff of one, acting as Signalman, Station Master, Ticket Collector and Crossing Keeper. The track plan is also simple, but interesting, although there are only three sidings. Although I cannot show you the British Railways plan for this station, because of space restrictions, the layout is, in fact, only slightly different from my design, which is shown in the diagram on this page.

In the original station design, the track curves gently away from the platform, so the first task is to straighten out the station layout so that there is no overall curve. I did this because the curves of Hornby-Dublo track would be too sharp to suit the nature of the layout of the original station, with its gentle curve. So I think the reader will agree that it is better to build the station on the straight rather than to follow an exaggerated curve.

"LINESMAN" continues his series "From The Train Set Onwards"

Although the British Railways station is a through station, the modeller may, if he wishes, use it as a small branch line terminus. This would not alter, to any marked degree, the character of the station, which I think would be unaffected whether the station were built either way. This type of station layout lends itself to scenic modelling, for what is lost in actual track area is gained by the almost unlimited scope of the rural surroundings. Readers will notice that behind the station building is a large wood, and an embankment.

Stock for this line would consist of a tank locomotive and two coaches, with a total of eight or nine goods vehicles. The one locomotive would not only work the regular passenger service, but would also perform the shunting movements in the station. The operator may even couple a few wagons, or vans, on the end of the passenger coaches, making a "mixed"

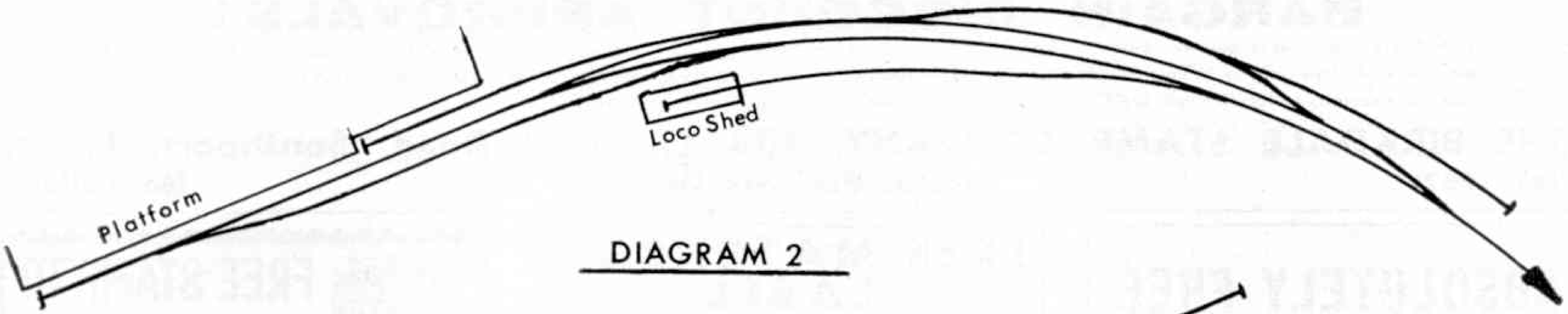


DIAGRAM 2

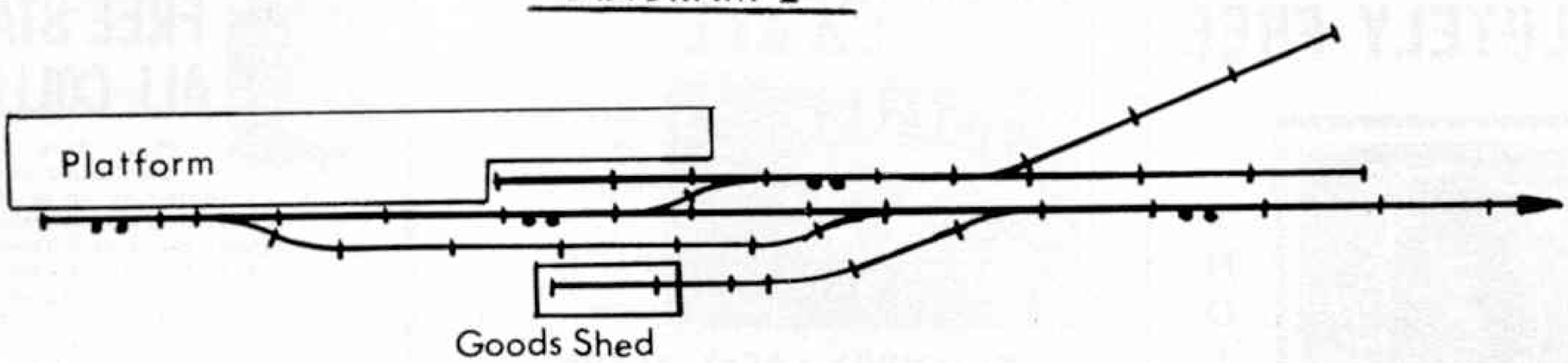


DIAGRAM 3

train. The wagons would be detached at the station, and shunted into the goods shed. Finally, empty wagons, or loads for other destinations, would be attached to the end of the passenger train for the return journey to another point down the line.

The second prototype I have chosen is the well-known Tetbury Station (Western Region). This is rather more extensive than the other, but is similar in the sense that they both serve rural communities. Because of its greater size, Tetbury Station is capable of handling rather larger trains and a more varied type of traffic; it also has its own locomotive shed. Diagram 2 shows the plan of the actual station. As in the case of the first station mentioned it runs in a large sweeping curve. The layout is once again straightened in the miniature version (shown in Diagram 3) to keep the station in character with its surroundings. The trackwork also has been changed to allow the station to be shortened. Otherwise it would be rather too long for the average modeller to accommodate.

The modifications in the trackwork are quite simple and consist of omitting the goods shed loop, and joining the two sidings at the end of the loop on to the line that eventually joins the platform road. I have also added a head-shunt on to the run-round loop to aid shunting. One line forms an end-loading bay for wagons. The vehicles concerned are pulled into the head-shunt or shunting spur by a locomotive, and then pushed by it into the bay.

It will be realised that many prototype station plans can be modified in much the same way as the two I have dealt with in this article. What is chiefly required is a sound knowledge of the station you propose to modify. Both Hornby-Dublo diagrams are shown with Simplec Points.

A Welcome To Simplec Points

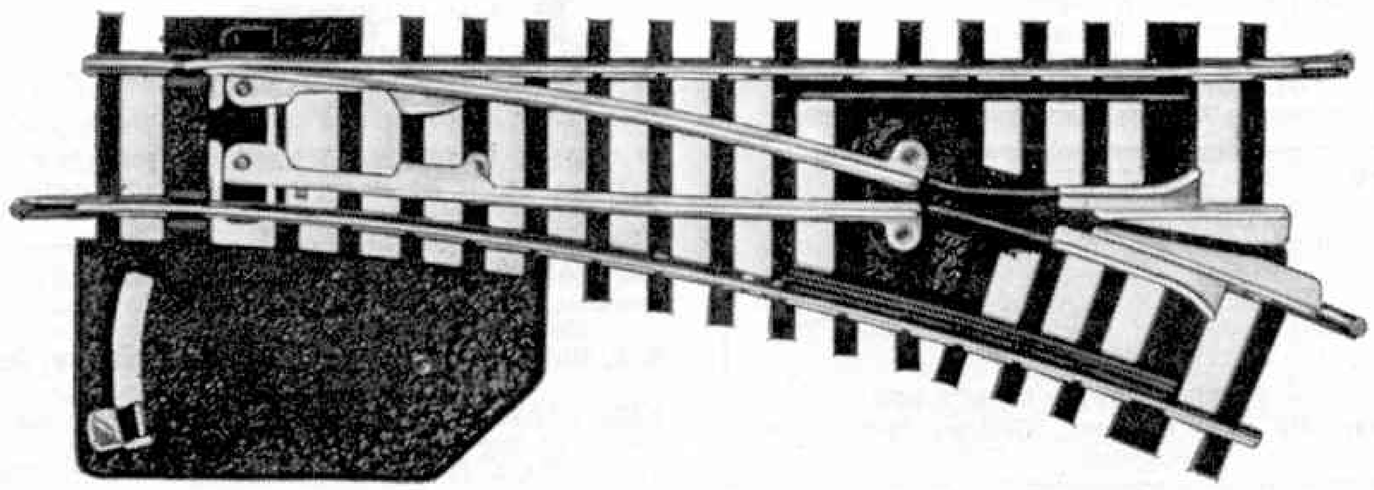
● ***The following comments on the introduction of Simplec Points into the Hornby-Dublo system are reprinted from the Model Railway Constructor by courtesy of the Editor.***

ONE of the snags in two-rail electrification occurs at points and crossings when current at one polarity in one rail must be led across current of the opposing polarity in the other rail, without causing a short circuit. The two most common methods of overcoming this difficulty are either by having a "dead" frog or by bonding the point blade-wing rail-frog assembly together as one electrical unit. Both methods have their advantages and disadvantages.

The "dead" frog arrangement is simpler but the conducting rail surface from which the wheels pick up current is not continuous, and adjoining rails must be perfectly clean to ensure adequate current collection, otherwise the locomotive may be jerky or even stop on the point. In the "dead" frog method the two point blades are electrically isolated from each other, and are permanently connected to the continuation rail beyond the frog. With a "live" frog, both point blades are electrically connected to each other, but not to the stock rails so that the polarity of the blades-stock rail-frog assembly depends on which way the point blades are set and, in consequence, which of the stock rails they are touching. However, this method needs an insulated rail joint beyond the frog on a continuous track to prevent a short circuit when the points are reversed towards a track deviating from the main line.

It is the second method that has been used by Meccano Limited since they introduced the two-rail system to the Hornby-Dublo range. To obtain the necessary insulation near point frogs special isolating rail-sections have been needed, and in some cases double isolating rails as well.

To overcome the complications of this method, Meccano Limited have now introduced points working on the "dead" frog principle, which do not normally need additional isolating rails, although the latter can be used to (*Cont. on page 448*)



The illustration on the left shows a hand-operated Hornby-Dublo Simplec Point.

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For Stamp Enthusiasts

The Post Office Awakes

By F. E. Metcalfe

WHEN the time arrives that a country's stamps reach their centenary, there is a rush to issue another set to commemorate the first one. Stamp collectors who remember how our own Post Office fought against honouring the "Penny Black" (and when forced into it by public opinion, etc. provided such a dull set that collectors, at least, wondered whether their protests had been worthwhile) must have wondered if they were dreaming when it was announced that we were to have half a dozen special issues during 1963.

As all concerned know, London holds a stamp exhibition every year. As is usual nowadays it is given a snappy name, and it has come to be known as *Stampex*. Readers who get a chance to visit the 1964 exhibition next March will really be miss-

ing something if they fail to grasp the opportunity to go there. Of course, there has to be somebody to open it officially, and who so suitable as someone connected with our Post Office? Last year the choice fell on Miss M. Pyke, who was the Assistant Postmaster-General at the time, and in her opening speech she actually asked for good suggestions of events worth commemorating with a special set of stamps—which illustrates how the attitude of the Post Office has changed over special issues. If there were any old-timers listening to those heartening words, they must have been certain that either they were imagining things or that they had actually "passed on" to the philatelists' Nirvana.

Just fancy, three sets in the merry month of May—that's what we got this year. Yet, what the Postmaster-General solemnly told Members of Parliament, when they were asking for the "Penny Black" to be honoured, was that six months was not long enough to prepare such an issue. But the Post Office has not entirely got rid of its inhibitions (or is it those behind the Post Office who are to blame?) for at the

present moment there is quite a discussion going on regarding a set of special stamps to mark the fourth centenary of the birth of Shakespeare. There was an awful rumpus when Scotland wanted the immortal Burns to be similarly honoured. Those responsible for Post Office policy dug their heels in and refused such an issue, claiming that only royal and postal events could be considered worthy of philatelic notice. Since then they have shifted their ground a bit, no doubt partly under pressure of public opinion, and now an event of national importance can have its set of stamps. But the embargo is still firmly held that only royalty, as individuals, can qualify.

And so, as the public will not let them get away with a snub for Shakespeare like the one administered to Burns, they have to issue a Shakespeare set. While conceding this point, the Post Office maintain their stand against portraits other than those of royalty, and claim that it is the national exhibition to be held to mark the centenary which can have the stamp, not Shakespeare himself. Such is the absurd position which the P.O. traditionalists have got themselves into.

But what about the stamps we *have* been getting? If we compare the designs with those of countries like Austria, etc., we are simply nowhere. Just compare the illustration with one of our "Nature Week" efforts or take, as an example, the "Lifeboat" issue, the last of the May trio. Look at the 2½d. value. Designers tell us that the inclusion of the portrait makes their task more difficult, and one can well believe that. But we are also told that the portrait always has appeared on our stamps, and anyhow if it were dropped from some of the special issues (no one suggests that it should disappear from the definitive stamps in regular use) we would have to put in the name of our country instead. And what is wrong with that if it happened to be true, but it simply isn't. The U.S.A., for instance, recently issued a stamp with no title, and I have yet to hear of any official complaint about it from the "U.P.U." As a matter of fact, many stamps have been issued without the

issuing country's name appearing on them.

There is another point: we have got so used to seeing the Royal portrait on our stamps that we fail to notice, in connection with some of the designs, that we are hardly honouring the Sovereign. Just look at some of our special stamps, and you will see what I mean.

When Britain brought out the first stamp, the head of Queen Victoria was included in the design—it was thought at the time that a portrait would be more difficult to copy for forgeries. Other countries followed our lead, Spain, for example, including the portrait of Isabella. But they noted what we had apparently overlooked—that it was not a very nice thing to have their Sovereign's image obliterated with a splash of black ink. So special cancellers were prepared, to avoid this as much as possible.

Anyhow, let us be thankful that our Post Office is moving on the right lines, for what with special first day cancellations, and even a philatelic bureau at St. Martin's le Grand, at long last it has been recognised that stamp collectors have money to spend, and that our own Post Office may as well get its share as allow it all to go to more enterprising institutions overseas. There is quite a programme of special issues for next year, but do please let us have some more attractive designs than hitherto.

Stamp Gossip

There's Gold in them thar' Stamps

COLLECTORS of modern stamps are accustomed to all kinds of stunt issues, which are thoughtfully issued by foreign post offices to tempt the coppers out of our always so very light pockets. But Tonga recently released a set of stamps as fantastic as the supposed reason for its emission. Earlier in the year that far-away island issued a set of coins (at least, it was Tonga which was supposed to be responsible for their emission) the first in Polonesia, it was claimed, in gold. As the number of sets was limited, there were not enough to meet the demand, and no doubt those who obtained any were able to make a nice profit, which was, of course, the real reason behind the venture. The next move was to bring out a set of "gold" stamps to commemorate the gold coins! What a tie-up! Anyhow, the stamps are exceedingly interesting and showy, so no wonder there was a rush to buy.

I wonder what they will think up next, to tempt we poor philatelic fish?

PALMS AND FLATS

When we think of Malaya, swaying palms flash across our minds. At least they do across mine, as I once saw them for myself. So Singapore's "National Day" stamps, issued recently, came as quite a shock, for instead of the design (common to both stamps in the set) showing a tropical scene it depicts—of all things—skyscraper flats. In the brochure accompanying the stamps I read that the multi-storied flats illustrated on the stamps are typical of many others which have been built by the Singapore Housing and Development Board. Why, one might be reading about what is going on in our own prosaic cities, instead of the romantic tropical Far East. The stamps are bright and attractive in their way, but multi-storied flats—I ask you!

Yet we must not overlook the current definitive issue of Singapore, with its tropical fishes and orchid designs. These, indeed, are what we expect from such a country.

BETTER LATE THAN NEVER

And now we come to a very interesting pair of stamps. It will be remembered that last year President Kennedy of the U.S.A. and Britain's Prime Minister, Mr. Mac-Millan flew to the Bahamas for a conference on various matters, mostly pertaining to defence. It was a conference which had far-reaching effects. At the time of the talks, it was thought that Bahamas would at least overprint some stamps to mark the big meeting, as Bermuda did when it was similarly honoured. I wrote at the time to Bahamas, but was told that there was not to be anything new. However, apparently there have been second thoughts, as on July 15 last the 8d. and 10d. stamps were issued overprinted BAHAMAS TALKS 1962. Well, better late than never, collectors may have said. At least they must have thought along those lines, for the two stamps have been best sellers.

EUROPA

I remember how, during the second world war, when we used to sit in air-raid shelters and play little games to help pass the time until the "All Clear" sounded, one of the favourites was for a player to give a letter, and the name of a continent. You had to guess, at one go, the name of the country which began with the letter given. It came my turn one night and I gave the letter L and Europe as the clue. They would all have been stumped but for a youngster who was taking part and who, alas, was a stamp collector. He at once bowled me out by giving the name Liechtenstein. As a matter of fact most of the company had never heard of it. But among stamp collectors it is only too well known by reason of the stamps it issues. Attractive stamps, too, and of course it is in on the annual "Europa" issues with a most attractive design. This consists of a composition of Greek architectural elements, as the Post Office itself describes it. Certainly a stamp issue worth having.

THE TIP OF THE MONTH

The Crown Agents issue a monthly Bulletin, and from time to time publish in it the numbers sold of the various special issues which they handle on behalf of the many British Colonies of whose stamps they have charge. Earlier this year, as everybody knows, the Queen visited Australia, and as Fiji was also visited en route that tight little colony overprinted two stamps to honour the visit. Now the Crown Agents report that their sales of these stamps were only around 62,000 sets. With sales in Fiji added, to make a total of, say, about 100,000 sets, this looks like being a set to buy now.

NEW COMMONWEALTH STAMP CATALOGUE

The 1964/65 edition of the *Commonwealth Catalogue of King George VI Postage Stamps* covers the whole range of Commonwealth issues of that reign, including special issues and postage due stamps. It is lavishly illustrated, and is published by the Commonwealth Stamp Company, Leather Lane, Liverpool 2, price 9/6d. or 10/3d. including postage.

By E. W. Argyle

The Royal Navy On Stamps

H.M.S. VOLAGE

THIS stamp depicts the capture of Aden on January 19, 1839, when a combined force under Captain Smith, in the frigate H.M.S. Volage, *28 guns, together with the brig* Cruizer, *16 guns, and one or two smaller vessels, bombarded the forts on the heights above them. After this preliminary softening up, a naval landing party, under strong covering fire, scaled the heights, spiked the guns and captured the forts. As a result, the Sultan received a monthly salary and Great Britain acquired an invaluable coaling station.*

H.M.S. PROTECTOR

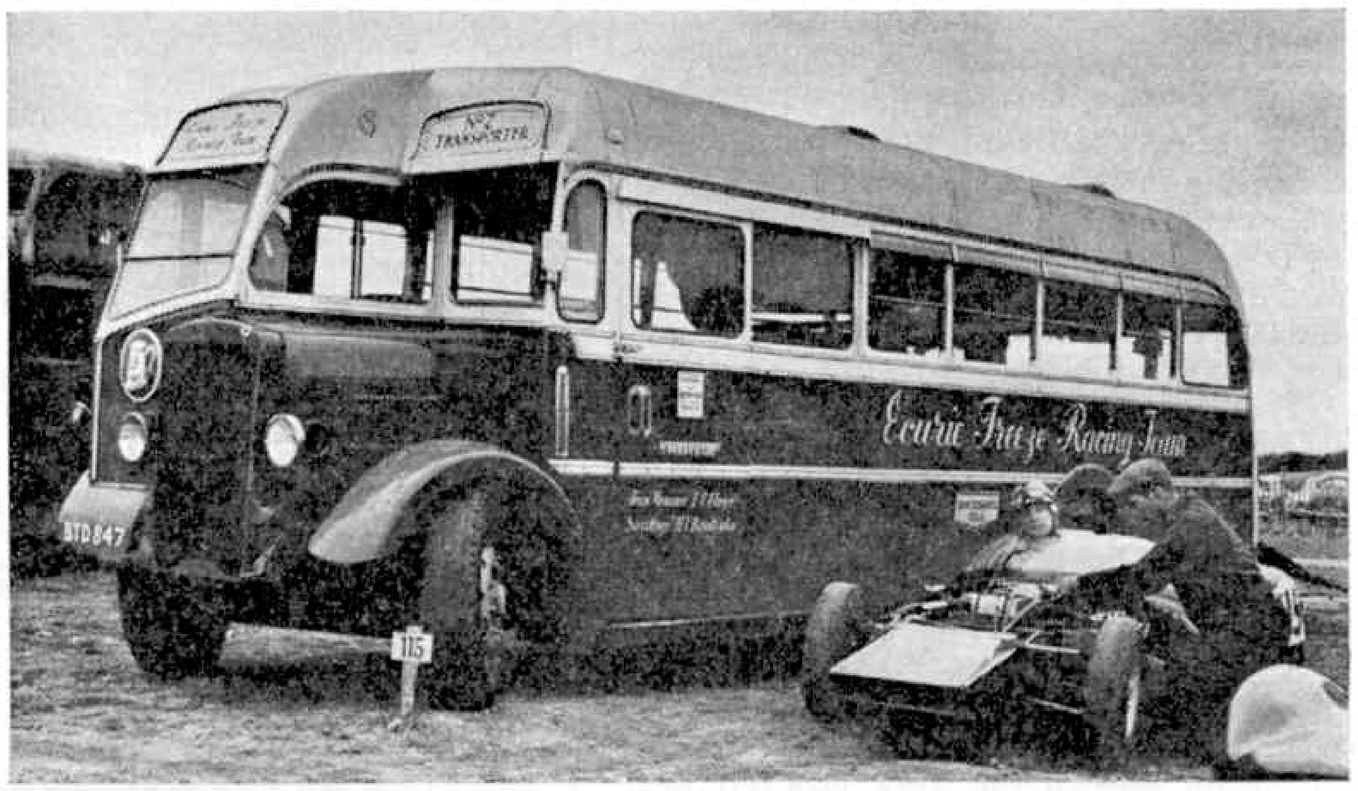
H.M.S. Protector *was built by Yarrow & Co. Ltd., at Scotstoun, and completed on December 31, 1936. She is designed as a netlayer, and also for target towing. Her standard displacement was 2,860 tons, but this has since been increased to 3,450 tons. In 1955 she was refitted for service in the Falkland Islands Dependencies (now known as British Antarctic Territory) and was provided with a hangar for two helicopters, a landing deck aft, an enclosed bridge and enclosed look-out position.* H.M.S. Protector *is 338 ft. long and carries a complement of 238.*

Here Is David Kaye
Calling All Bus Spotters

ENTRANCES AND EXITS

I HAVE seen buses end their days as mobile shops, mobile showrooms—for anything from furniture to cooking utensils—and even in one case, as a mobile church! However, BTD 847, an ex-Leigh Corporation Leyland "Tiger" has been converted into a racing car transporter for the Ecurie Freeze Racing Team of Ilford, Essex. The front portion of the vehicle carries the team, while a Lotus 23 and a Gilby-Climax travel at the rear.

Nevertheless, it is apparently not just old vehicles which are appearing as transport transporters in the congested times in which we live, for with the opening of the Dartford–Purfleet Tunnel last month London Transport put into the service five bicycle-carrying buses, which they are operating on behalf of the Dartford Tunnel Joint Committee. Although cyclists are allowed to ride through the tunnel under their own "steam" between 10 p.m. and 6 a.m., outside these times such a procedure would be too dangerous, so they will be expected to use these specially-equipped buses which will run nine journeys in every hour at peak times, with six departures to the hour on other occasions. The journey time through the tunnel by cycle-carrier is expected to take, normally, five minutes. Every cyclist will be subject to the sixpenny toll, whether he cycles through or goes by transporter.



Built for Leigh Corporation in 1937, this Leyland bus has been given a new lease of life by the Ecurie Freeze Racing Team, of Ilford, who have converted it into a racing car transporter. A Marcos G.T. is towed behind on a trailer. Photograph by courtesy of Standard Triumph.

The five special buses will have the usual Thames "Trader" P.S.V. chassis modified by a cranked front axle, wider track and specially designed suspension to lower the chassis height by 4½ inches compared with the production models. Strachans of Acton (who have been somewhat outside the p.s.v. field in recent years) have built the bodies, which are just over 30 feet in length and 8 feet in width. The lower deck cycle racks can carry 23 machines, while the upper deck has accommodation for 33 passengers. A special rear compartment, however, caters for tricycles and tandems, which explains the apparent discrepancy between the two figures. Note the offside entrance to the vehicle which, in our eyes, gives it quite a continental look!

But what about the ordinary passenger who wishes to cross from Kent to Essex? London Transport have introduced a new country route (300), which runs every 80 minutes (in peak hours it has a 40-minute frequency) from Dartford (Market Place) to West Thurrock and Grays. In addition the Green Line route 722, for double-deckers, from Aldgate to Corbets Tey is lengthened by way of the new tunnel to link up with the 725 route (Dartford–Windsor) at Dartford Market Place. These extended journeys run every half hour during peak periods, and only hourly outside these times. Thus the total number of regular p.s.vs. using this new way under the Thames will be twelve every hour in each direction during most of a weekday, reducing to seven or eight in the evenings and on Sundays.

On June 5, the delightfully unorthodox independent Silver Star Motor Services Ltd. of Porton Down, near Salisbury, were taken over by their big B.T.C. neighbour, Wilts & Dorset. Many of us will be sorry to see the disappearance of this unusual fleet with its "Atlantean" coach, three service "Atlanteans", Trojan minibus and modern collection of Leyland coaches and o.m.o. buses. Wilts & Dorset have numbered the Silver Star stage carriage route from Porton Down to Salisbury as route 9S, and have taken into their own stock the following vehicles: "Royal Tiger" 28 (HWV 793); "Tiger Cubs" 29/30 (OHR 280/1), 31 (PHR 829), 32 (PMW 386), 33 (RAM 620) and 34 (SAM 47); "Leopards" 38 (WAM 441) and 39 (WWV 564). All the staff have been taken on by the new owners, and the Porton Down Depot (opposite the Germ Warfare Centre!) is to be used as a store. Other coaches have become 3801–6 in the Western National fleet, being in Royal Blue livery.

Finally, I should like to recommend to you two excellent brochures, which have recently been published. The first is entitled *Glasgow Tramways—62 Years of Service* and costs 1/9 post free from the Scottish Tramways Museum Society at 46 Wellshot Drive, Cambuslang, Glasgow. This booklet tells in non-technical language the story of the tram in that Scottish city up to its extinction a year ago. There are eleven very good illustrations

(*Continued on page 448*)

The special double-deck passenger-cycle transporter built by Ford of Britain, with Strachans of Acton, at the request of the Ministry of Transport, for service through the new Dartford–Purfleet Tunnel. Cycles are carried in racks built into the lower deck of the bus, while their riders travel in comfort on the upper deck. A special compartment at the rear caters for tricycles and tandems. Photograph by Ford of Britain.

The Wolseley Gyrocar—

(*Continued from page 407*)

Royalty, was badly hit by the recession in the motor industry and, like so many other well-known firms, it was bankrupt. The owners, the great Vickers armaments and aircraft combine, sold the company to the late Lord Nuffield, whose Morris cars had become a household word.

Then in 1938, nearly twenty years after its internment, someone remembered the Gyrocar and decided that, after all, it could be of some value, if only as a curiosity. The order was given for the strange vehicle to be resurrected from its grave. This apparently simple process was complicated by the fact that the area in which the car had been buried had been turned into a railway goods yard. However, part of the track was removed and the decayed remains were brought back into the light of day.

Many pounds were spent on the car's restoration and, although it never again took the road, the Gyrocar was accorded the place of honour in the company's museum.

According to factory rumour, the count reappeared again shortly after this. An old man living in exile, and deprived of his estates, he is supposed to have visited the factory one day to see his invention. Then, he disappeared again—this time for good.

The Gyrocar survived the second world war, emerging unscathed from the heavy air raids that damaged the factory in 1940. But, with the coming of peace, the words "white elephant" were again used, and the long and eventful life of the strangest vehicle ever produced came to an undignified end, in 1948, when the Gyrocar was finally broken up for scrap.

Devil's Copper—

(*Continued from page 411*)

through the reaction chamber so that there is a steady stream of pure nickel—at least 99.97 per cent. pure—to the tune of 11,000 lb. per day from each decomposer.

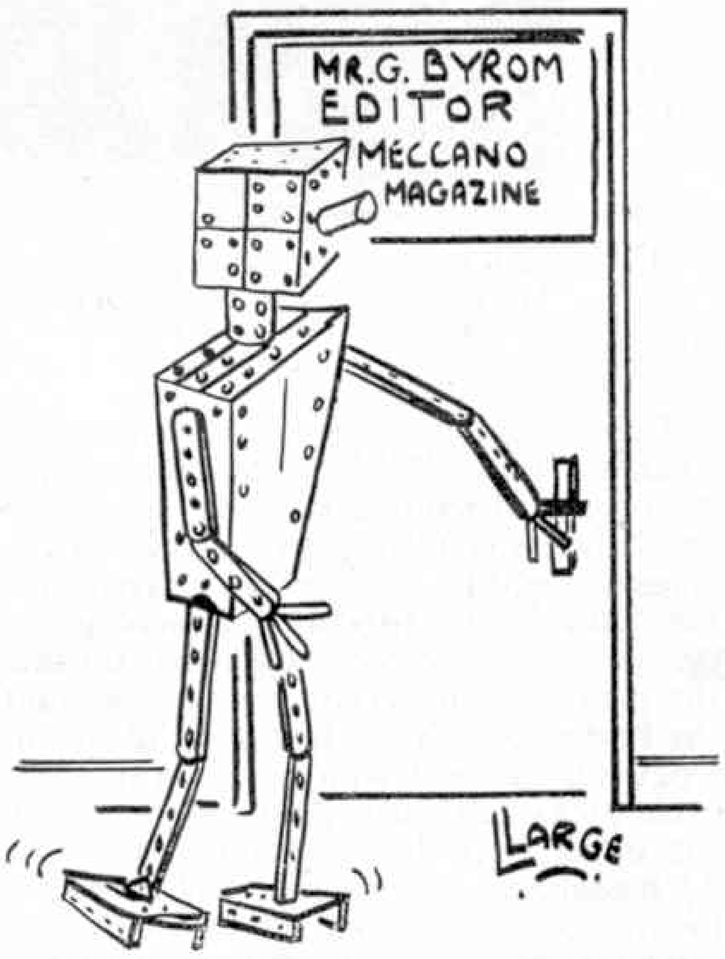
At Clydach, there are sixteen decomposers which are fed by 44 volatilisers and twelve reducers. Much of the operation of the decomposers is dealt with automatically from a central control room where there are many elaborate safety devices.

The main function of the Clydach plant is to produce pure nickel pellets, but there are also important subsidiary products—nickel and iron powders—which are used mainly in the electrical and electronic industries.

* * * *

In the present age nickel, although it is not discernible to the layman, is everywhere. It is used in radio and television sets; it strengthens the pin in a pair of spectacles and the steel girders of modern bridges; it is used in machines and containers where food is manufactured and prepared; it is in motor car engines, jet engines and diesel-electric locomotives; it makes things brighter, stronger, rust-proof and heat-resistant. Nickel has a thousand and one uses, sometimes alone but usually alloyed with steel, aluminium, cast iron, copper, brass, bronze, molybdenum, cobalt, titanium and gold.

Nickel may once have been Old Nick's Copper to the miners of ancient Saxony, but to today's engineers and designers, who have recognised its amazing physical properties, it is a godsend.



Cycling Through the Gateway to Normandy

(*Continued from page 414*)

had gone yet again, I headed for a cycle shop, and later found myself some lunch. The castle keep was not open, unfortunately, so I contented myself with a view from the battlements, imagining that I was an archer in the Middle Ages.

After lunch there were more climbs to the source of the Fouillebroc river in the Forest of Lyons where, for mile after mile, one can ride through tall trees which shelter flocks of rooks, badgers, foxes, deer and even moars, an animal now unknown in England. There was little or no traffic to spoil the coolness of the forest, and no foreign sound save the swish of my tyres.

I spent the night at a little village called La Feuillie, on the N 30 out of Rouen—only 1,100 people, yet an area the size of Paris and a church steeple, fully slated, the height of Nelson's column (more than 175 feet); and a gem of a French commune whose little bistro found me a room for the night and gave me an enormous dinner. The gendarme told me about the huge spanner, used to tighten the brace bolts of the church steeple, which is itself five feet tall, and I managed to take a photograph of it.

My bed was of feathers, and the noises of the farmyard outside lulled me to sleep after my dinner. With breakfast it only cost me thirty shillings. As the gendarme, the hairdresser, the café proprietor, two farm workers and a truck driver waved me off in the morning towards Dieppe, I felt quite a touring character.

Then followed more of the same beautiful rolling countryside, obviously made for dairy farming. I followed the Andelle Valley into Dieppe, where the boat was awaiting my arrival, or so it appeared, for it left within half an hour.

I rode up from the coast into London, where it seemed quite cool after France. In three days on the road I had packed in 290 miles, yet I did not feel really tired, nor, oddly enough, was I saddle-sore, perhaps because I had lost about half a stone.

All I had spent was the cost of the boat trip and a couple of night's bed and breakfast. During the day I ate bread, fresh fruit and cheese and got plenty of Vichy water and fresh air. But in those three days I had visited another world.

Railway Notes—

(*Continued from page 417*)

Railway enthusiasts of all ages, one is glad to note, continue in large numbers to pursue many aspects of their studies or hobby. The large Societies and other bodies around the country, with commendable co-operation from British Railways and other operators, have recently chartered, and have usually carried through successfully, quite a number of long or short distance special trains of far from ordinary character!

Not only are parts of the routes selected often exceptional, including some normally "closed" or freight-only tracks, or a combination of main and secondary lines with perhaps a high-speed section, but the locomotives (steam if possible) may be anything from a Pacific to a "Terrier" or an 0–4–0 dock tank and may range far from their usual haunts.

New Hopper Wagon—

(*Continued from page 439*)

tain of the window openings are the representations of the bars fitted across inside the window glass on the real vehicles in order to prevent any damage that might be caused by the handling of luggage, etc. inside the van.

The bodysides are finished in B.R. maroon, and the van carries an appropriate London Midland number. The six-wheel underframe is finely detailed, and the axleguards, with axleboxes, springs and battery boxes are represented.

This new van will be found most useful for adding to the luggage capacity of your passenger train, while it is ideal for use in conjunction with other vans, particularly the bogie No. 4075 Passenger Brake Van, in the formation of trains for mails, parcels, milk and so on. In addition, it will be quite in order for you to use the new six-wheeler at the tail of your most important express freight trains.

A Rare Railway Souvenir—

(*Continued from page 409*)

in the official programme of the Liverpool and Manchester Railway Centenary Celebrations published in Liverpool in 1930. This gives a three-quarter view of the train, again in the Moorish Arch setting, entering the Wapping Cutting, from the Manchester direction.

In this, and in the Vignoles drawing, the engine is running the opposite way round from that shown on the jug. So it looks as though *Novelty* was used like a tank engine is today, running either way without turning. Next to the engine is a wagon, again well loaded with casks and bales. Then comes a vehicle bearing the wording *Railway Omnibus*, a curious affair having central entrance with steps, the upper part consisting of slender-looking pillars supporting a kind of canopy. This is followed by two flat wagons carrying road vehicles with their passengers, an early form of road–rail transport. All in all, the jug provides a very fine example of the way in which artists of by-gone days helped to preserve memories of great occasions for the benefit of posterity.

Dinky Toys News—

(*Continued from page 427*)

all the mistakes. Here is the list of winners: First prize, C. J. Jenkins of 226 Warwick Road, Kenilworth, who wins a Dinky Toys Mayfair Gift Set. His slogan was: "To cycle skilfully is to cycle safely". Consolation prizes have been awarded to the following: John Lacey of 58 Sycamore Avenue, Lenzie, Kirkintilloch, Glasgow; R. G. Boniface of 5 Alan Grove, Fareham, Hants; I. J. Petrie of 9 Crich Circle, Littleover, Derby; J. F. Jenkins of 3 Davy Cottages, Blackshawhead, Hebden Bridge, Yorkshire; Keith Thorogood of Valley Farm, Caravan Camp, Valley Road, Clacton-on-Sea; David Morgan of 42 Mill Road, Caerphilly, Glam; Neil Greig of 52 Station Avenue, West Ewell, Surrey; Eric Day of 4 Crossfield Road, Princes Risborough, Aylesbury, Bucks; Peter White of c/o E.S.C. Umniati, S. Rhodesia.

Trains on Our Roads?—

(*Continued from page 425*)

control car! This is equipped to provide sleeping and eating accommodation for six men—the crew, plus three relief men. This apart, it also houses all the controls for the entire train, as well as complete communication and navigation systems. When required, the control car can be used by itself or with one car attached, the necessary power being provided by a small auxiliary generating plant which is also located in this car.

As noted, this multi-unit carrier is initially intended for military use, being designed to carry all kinds of equipment and cargo over terrain where routes are long, fuel supplies limited, and roads rough or perhaps even non-existent.

Yet it is easy to glimpse a wider and more productive use for this powerful vehicle, especially in undeveloped regions where transport on a large scale is needed to exploit the natural resources of the area.

Road and Track—

(*Continued from page 431*)

"A" type unit as modified for use in Formula Junior, yet in spite of its considerable increase in power will run without any trouble at 20 m.p.h. in top gear, although it is mainly intended for those who appreciate higher performance.

Maximum speed of the car I had for test was 93 m.p.h. Under favourable circumstances, I exceeded 100 m.p.h. by a small margin. At speeds upwards of 87 m.p.h. there was a fair amount of vibration, although the power unit is smoother than the standard Mini-Cooper.

The punchy acceleration is fascinating; the little car streaks away from a standstill and can be up to 50 m.p.h. in just over nine seconds; 70 m.p.h. can be clocked in eighteen seconds and an easy 80 comes up in 28½ seconds. These are far quicker times than I have achieved in any family saloon of comparable size. Along motorways, 90-plus m.p.h. cruising is well within its capacity, although handling is a little more sensitive than that of a normal Mini-Cooper. The Lockheed brakes, with bigger front discs, are superb. Naturally, with the bigger engine and nearly 30 per cent. more power, its thirst increases, but not beyond all reason; pushing it really hard may bring it down to 27 m.p.g., but under ordinary quick cruising it improves to 32 m.p.g., and is better still if a gentle 60 m.p.h. will satisfy the driver.

Meccano and the Movie-Maker—

(*Continued from page 435*)

The professional moves his camera on a crane, which soars aloft at the touch of a button, carrying the operator with it. This proved rather too much for the limited resources of my Meccano Set, so I had to be content with remaining solidly earthbound while controlling a mere seven pounds of camera at the end of a jib.

Of several attempts to make the camera airborne (Figs. 4 and 6) the most successful used a long cross beam (Fig. 4) with the camera suspended from one end and exactly counterpoised by lead weights at the other. The lightest touch of a finger is then sufficient to set the cross beam gently moving up or down. A similar smooth rotating movement results from pivoting the centre tower on roller bearings. Refinements include a pivot for turning the camera about a vertical axis, and a means of locking the cross beam in any given position. A crane of this size (seven feet tall and seven and a half feet wide) provides rather a storage problem in a small suburban sitting room, so I made the cross beam detachable by turning two eccentrics which retract the pivots on which it turns.

Meccano is, truly, an asset to the ardent film maker, who can combine two hobbies in a multitude of profitable ways.

Editor's footnote:

Gordon Rowley's "Cactus Polonaise" can be seen among the Ten Best Amateur Films of 1961, at present circulating in Cine Clubs in this country. It is also available on hire from the Grasshopper Group Film Library, 35 Endell Street, London W.C.2. No Meccano, however, is visible.

Jobs for Your Hornby Breakdown Crane—

(*Continued from page 438*)

scheme which is well under way. This prototype is seen in the photograph which I took on Good Friday of this year, and the remarkable likeness of the model to this full-size crane can be seen from our illustrations.

Operation is particularly important, and if you watch such work in progress you are sure to come across some particular aspect that you can copy to give realism to your scene. For instance, in the course of the project shown in the picture the swing of the crane, during the lifting of the huge concrete beam, was such that it occupied the fast line adjacent to the one on which it stood. This meant that the diesel-hauled express to Euston had to be held, well away from the scene of operations, by a flagman.

This, then, is the set-up for bridge building or alteration on a model layout, and for this, the engineers' train will consist of the crane, one or more staff coaches and one or more packing and tool vans. The supply train will comprise a number of 4610 Bogie Bolster Wagons on which the bridge parts will be carried.

Naturally, it is necessary to ensure that engineering staff are available to perform their duties, and these must include a flagman at either end of the scene of operations, with a third man close up to give signals to those at distant ends.

"It's a time exposure."

A Welcome to Simplec Points—

(*Continued from page 441*)

provide automatic stop sections if points are not set correctly. The new Hornby points, which are of the usual 15 in. radius, are mounted on a plastic sleeper base which incorporates frog and check rail mouldings. The back-to-back measurements of the check to wing rails is 1.5 mm. and the check rail to frog nose nominally 15 mm. We found that scale wheels passed through the points with but a slight bump. The point blades themselves are cast to a modified rail section. An improvement over the earlier types of Hornby-Dublo points is the compact operating mechanism.

We welcome these points, for they simplify some of the complications of two-rail electrification, and with the model railway hobby daily becoming more complicated any move towards simplification is desirable.

Calling All Bus-Spotters—

(*Continued from page 445*)

and it is an ideal souvenir for the tram enthusiast.

The second publication received is the Diamond Jubilee Brochure of Eastbourne Corporation Transport Department, and this can be obtained from that department at Churchdale Road, Eastbourne, Sussex, for 3/3d. post free. This even has a coloured cover showing car 59, one of the special Sea Front "Regent Vs" with translucent roofs and full drop windows. The other photographs trace the story of the motor bus in the first municipal authority in the world to operate such vehicles. There is even a section on the development of bus shelters! An up-to-date fleet list and route map form appendices. This is one of the best-produced brochures it has ever been my pleasure to read.

"Assorted dog biscuits."

Fireside Fun

The headmaster of an exclusive prep school looked aghast at one of the new boys who was wiping his knife on the tablecloth. "Look here!" he thundered, "is that what you do at home?"

"Oh no, sir," answered the boy proudly, "At home we have clean knives."

* * * *

"Which is the commonest beast of burden?"

"The ordinary tax-payer."

"He reckons he knows what the trouble is!"

"Good morning, Mrs. McCarthy," said the doctor, "and did you take your husband's temperature, as I told you?"

"Yes, doctor, I placed a barometer on his chest; it said 'very dry', so I bought him a quart of beer, and he's gone back to work."

* * * *

The sermon went on and on and at last the vicar paused and asked, "What more, my friends, can I say?"

From the back of the church came a sleepy voice, "Amen."

* * * *

When the young man entered a florist's shop to buy a small bouquet for his girl friend, the florist told him, "I suggest this one for a blonde, and this for a brunette."

"Maybe, I'd better take both of them," said the youth. "I don't know what she'll be tonight."

* * * *

HOWLER

Teacher: "What do you think Napoleon would be doing if he were alive today?"

Boy: "Drawing the Old Age Pension."

E.R.B.

Critic: It strikes me as being an impressive statue, yet isn't that rather an odd posture for a general to assume?

Sculptor: It isn't my fault; I had the job half done when the committee decided they couldn't afford a horse for the general.

* * * *

"Give me an example of a coincidence," said the teacher.

"My father and mother happened to get married on the same day," little Annie replied.

* * * *

A psychiatrist asked a patient what dream she had the previous night. She replied that she had not dreamed at all.

"Madam," he said, "I can't help you if you won't do your homework."

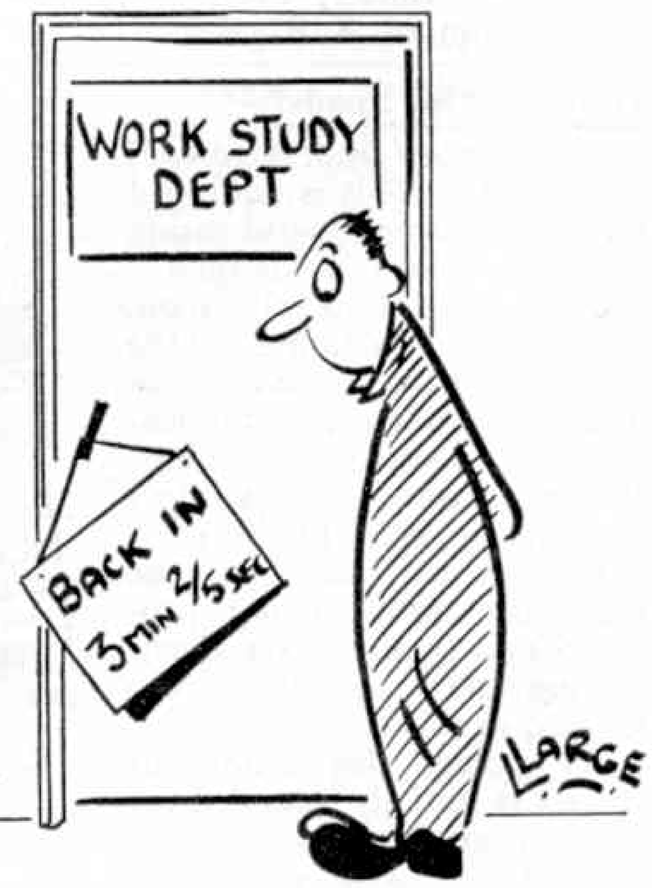
* * * *

"What's your uncle?"

"A cannibal."

"Just a minute. Don't you know that a cannibal lives on other people?"

"That's my uncle. He's been living on us for 20 years."



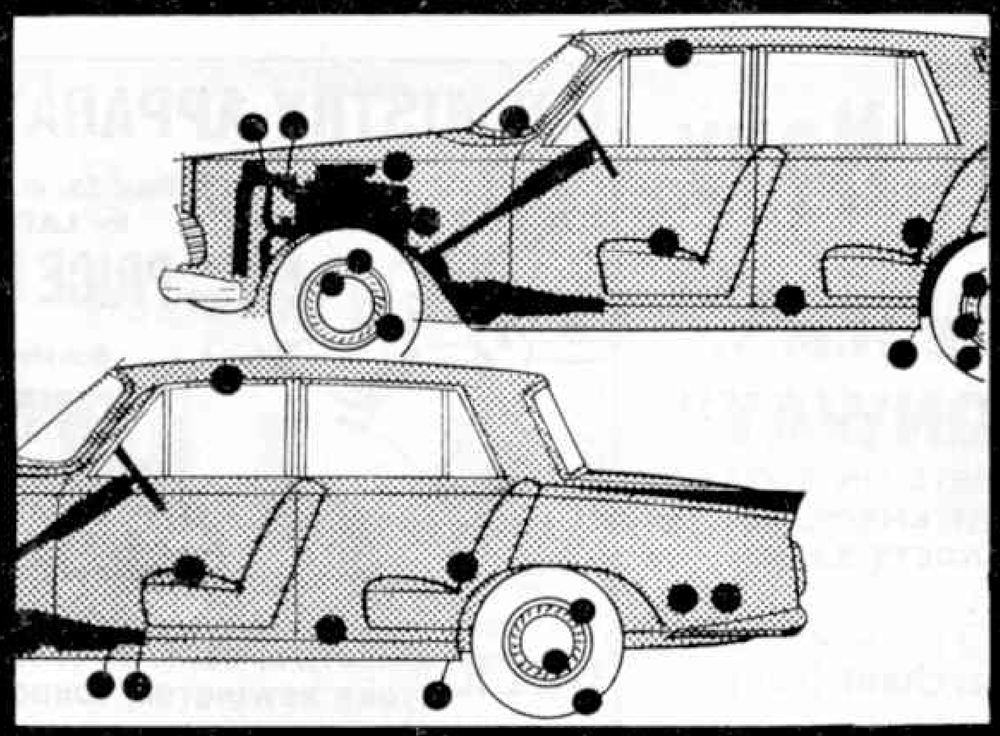
well! WHAT D'YOU KNOW...

STRIP TO AUSTRALIA

In making over 8 million bicycle wheel rims each year, the Dunlop Rim and Wheel works uses over 10,000 miles of steel strip—enough to stretch from England to Australia! Long spirals of this flat steel strip are fed into wonderful automatic machines which form and weld the rims in one continuous operation.

GENEROUS NATURE

In 3 or 4 hours a rubber tree drips out about a teacupful of latex. It is tapped for this length of time every other day and goes on giving for 20 years or more. In one year one mature tree yields enough latex to make the rubber for one Morris 1000 car tyre. Dunlop has over 90,000 acres of plantations in Malaya & Nigeria, with about 120 trees per acre. Imagine how much rubber is produced every year!



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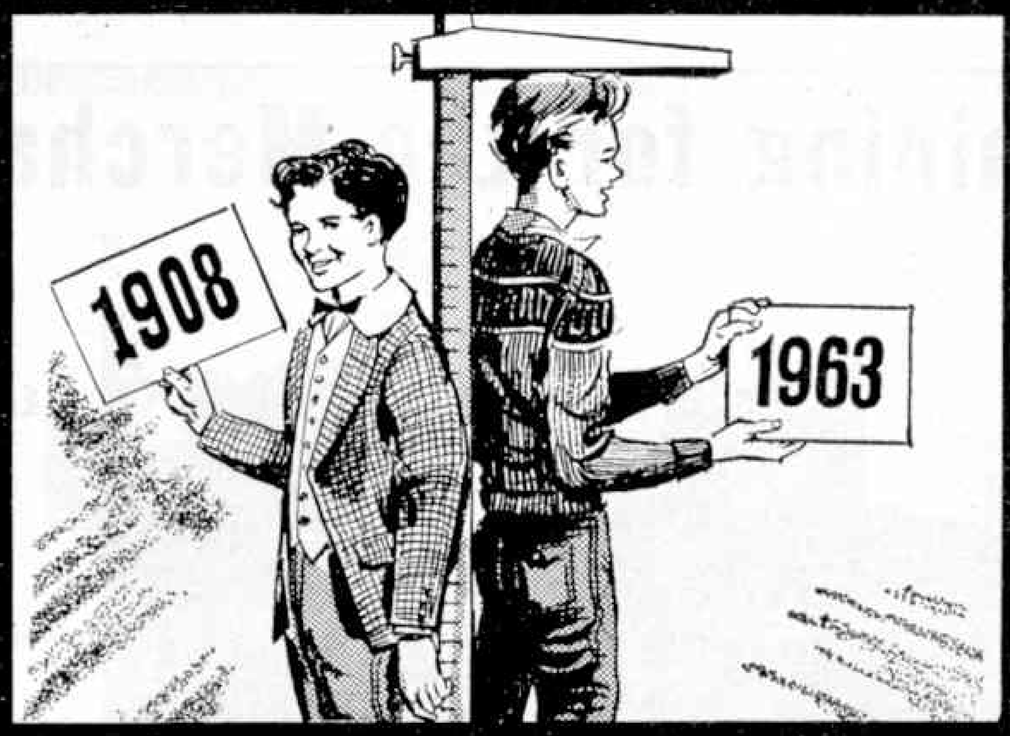
Perhaps you know that more British cars fit Dunlop tyres than any other make. But did you know that a modern car has many other things made by Dunlop? Disc brakes, Dunlopillo seating, rubber matting, anti-vibration mountings, flexible pipes and hose . . . you could find at least 30 Dunlop products. Even in the tool kit there are Dunlop jacks, pumps and tyre repair outfits.



YOU'RE GROWING TALLER!

Fifty-five years ago the average height of 14-year-olds was about 4 ft. 11½ in. Today the average is nearly 5 ft. 2½ in. Manufacturers of all kinds of things have to consider these 'growth' figures. For example, the Dunlopillo mattresses on all the beds at the new London Hilton Hotel were made by Dunlop to the extra length of 6 ft. 8 in. so that very tall people can stretch out in luxurious comfort.

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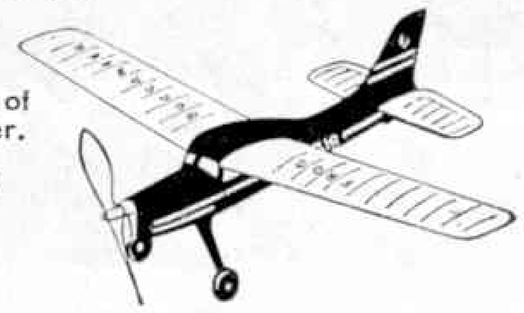

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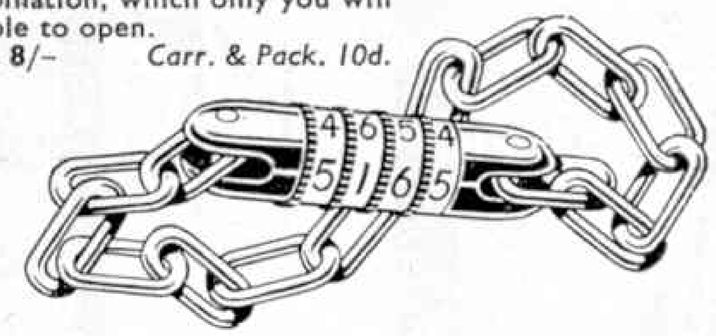

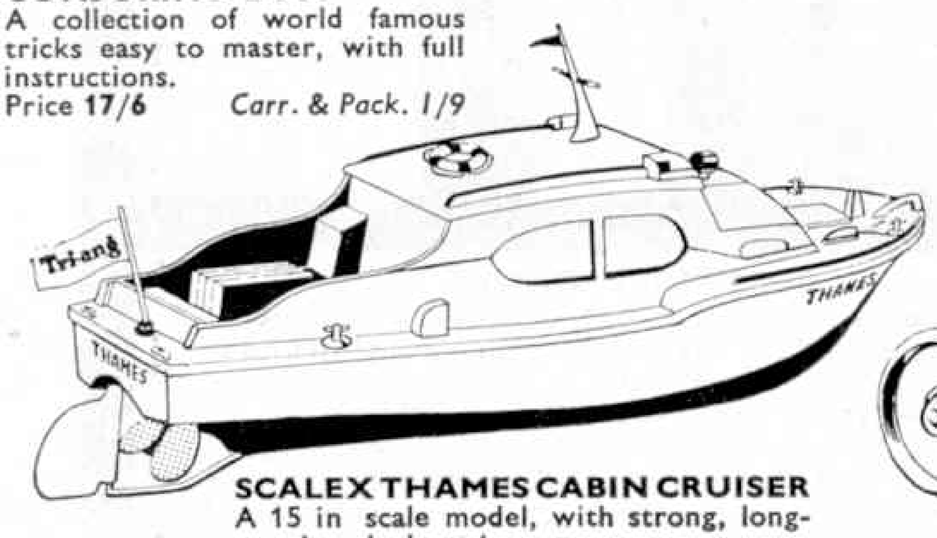

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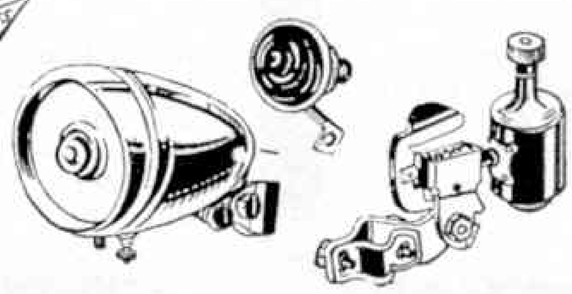

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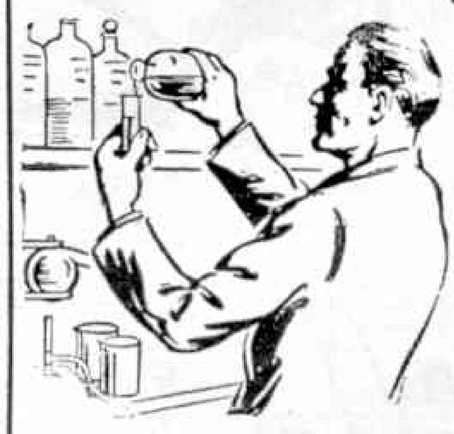

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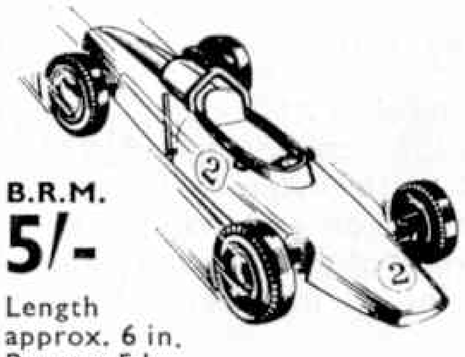

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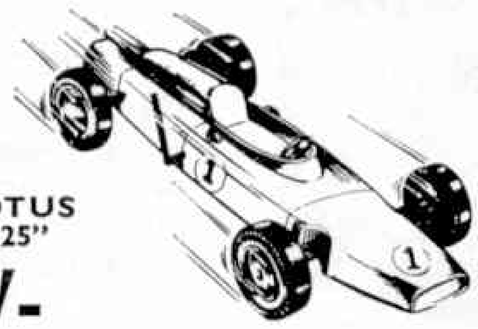

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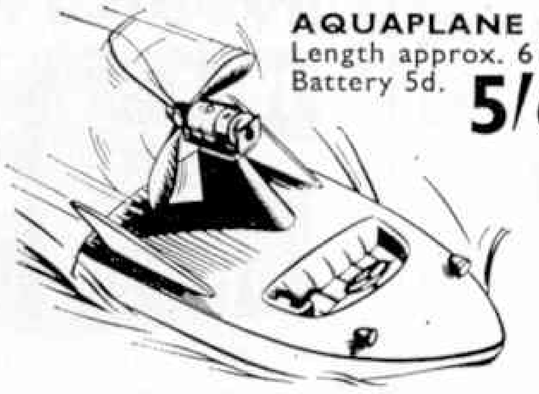

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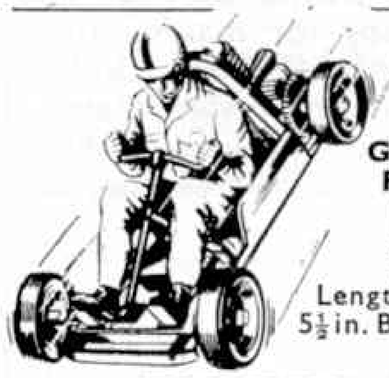

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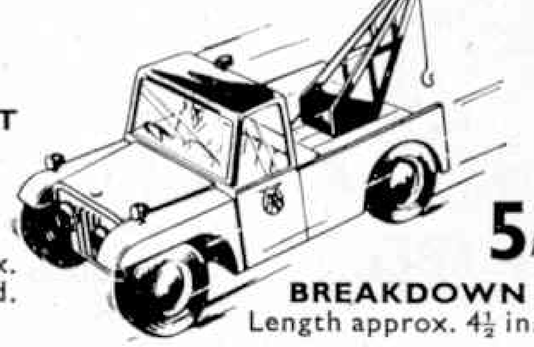

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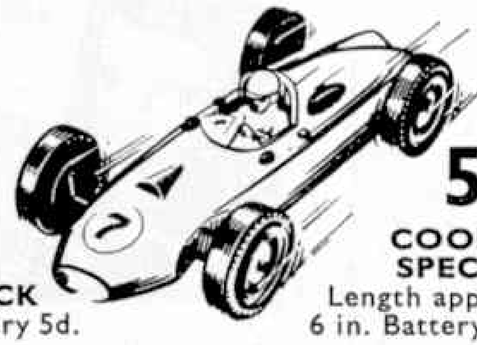

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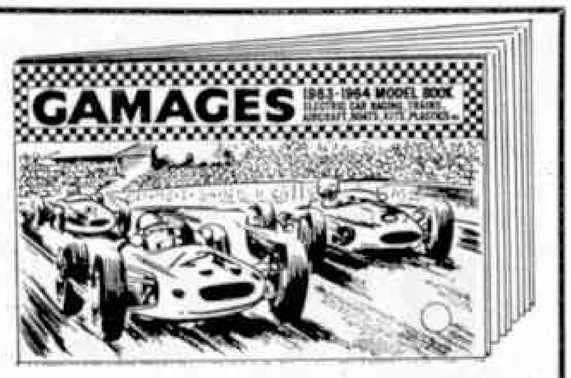

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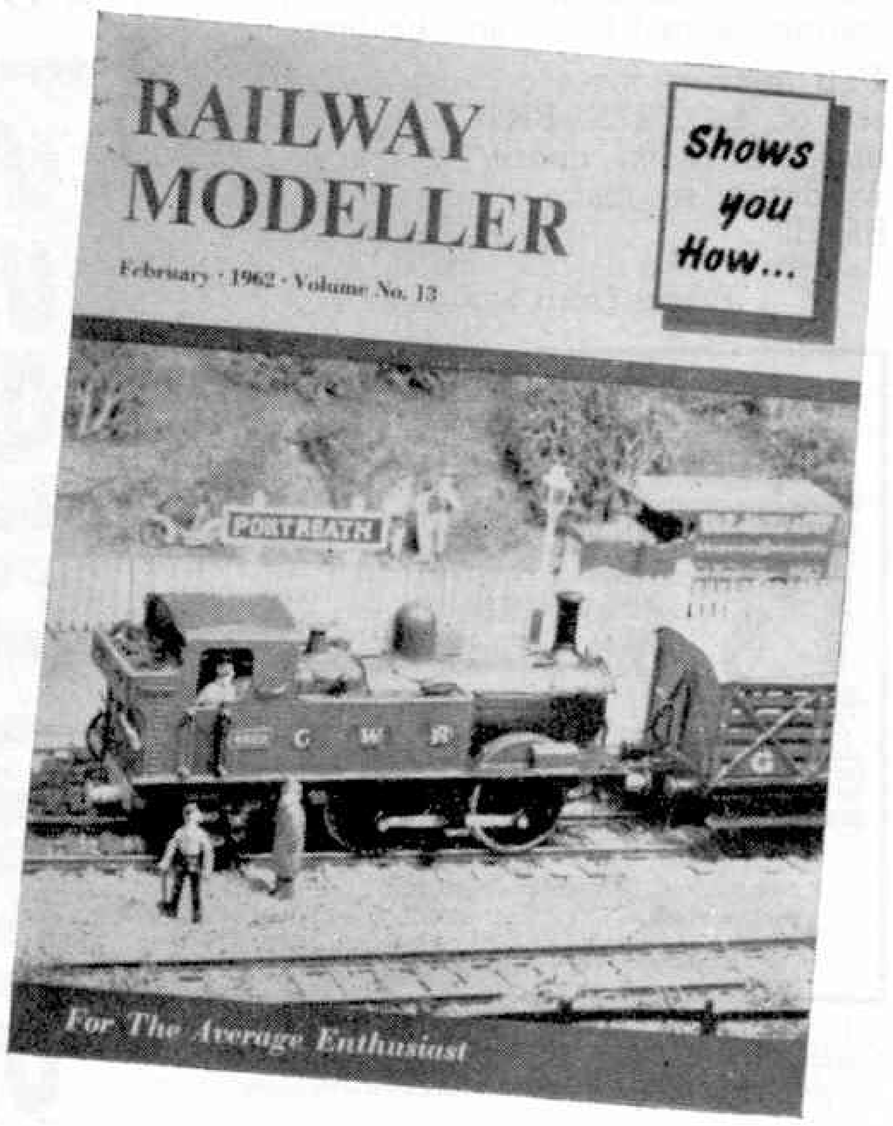

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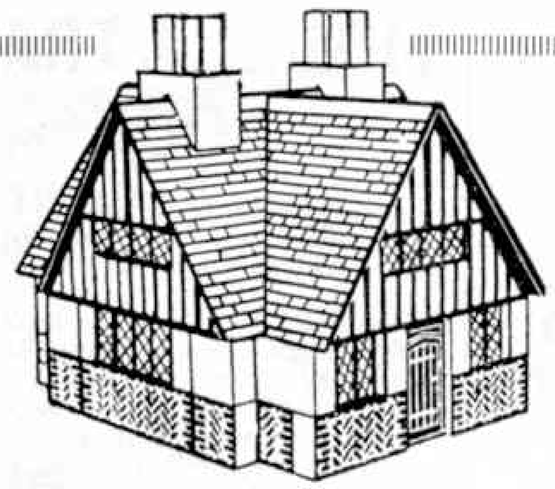

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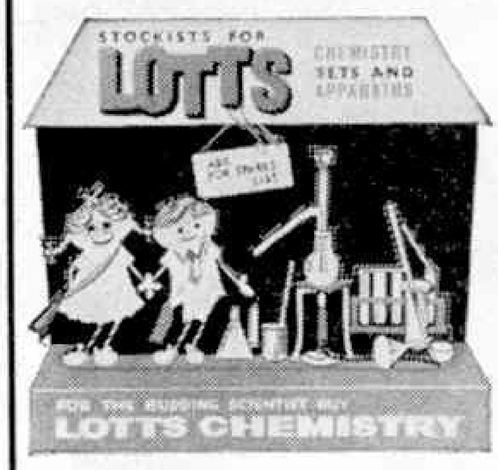

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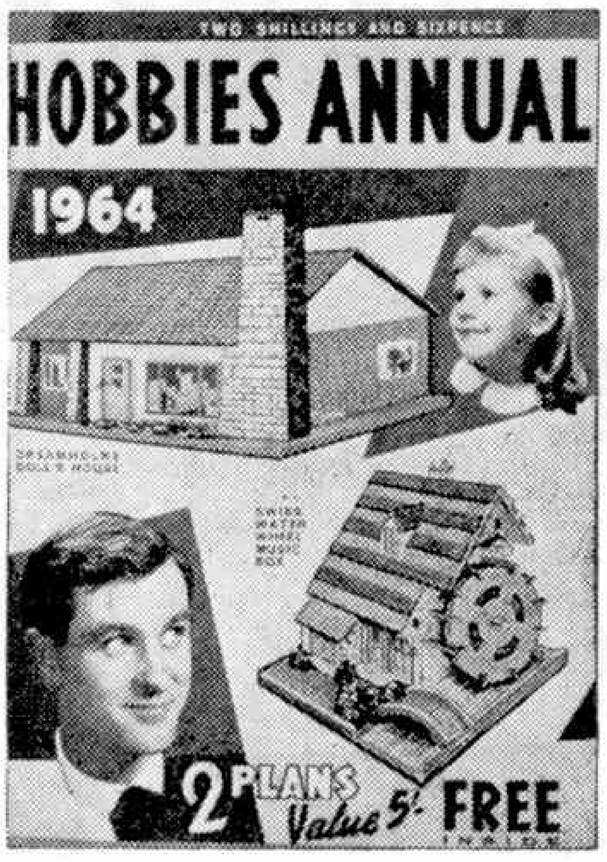

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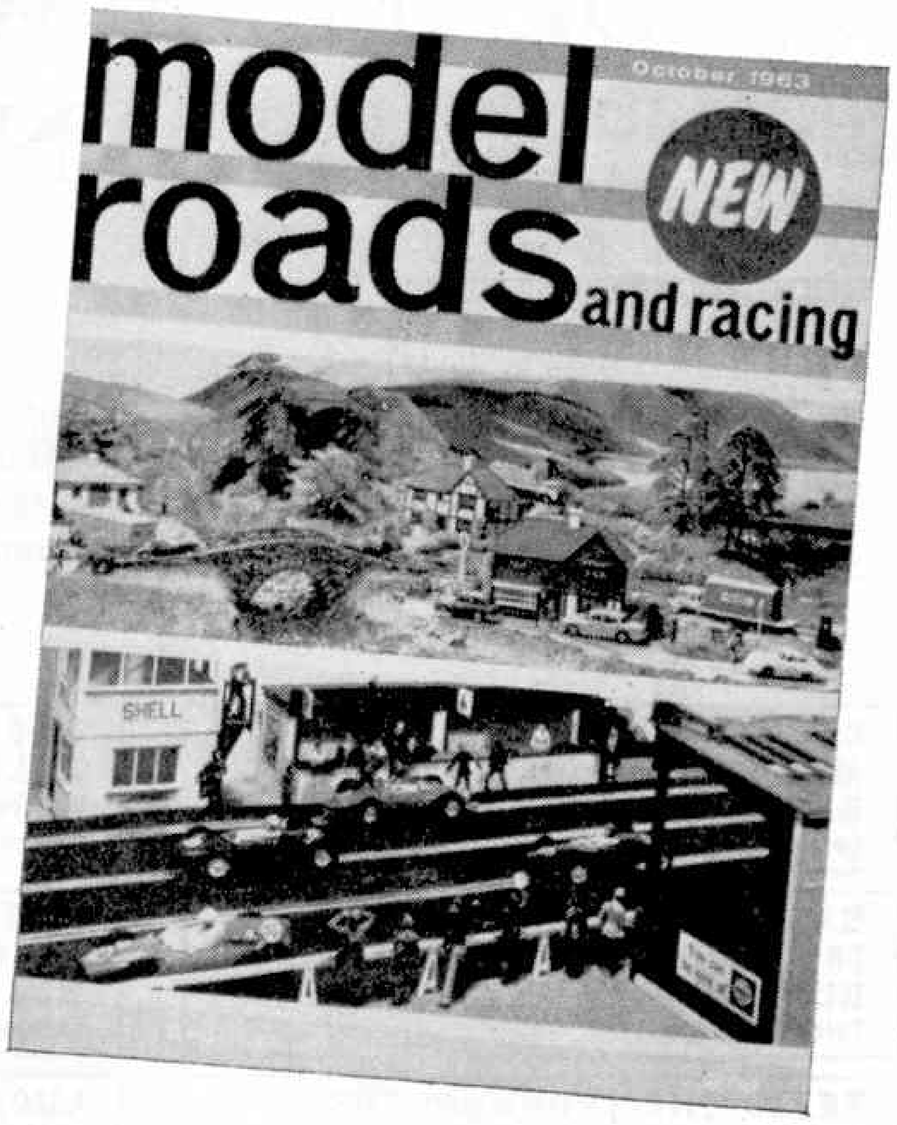

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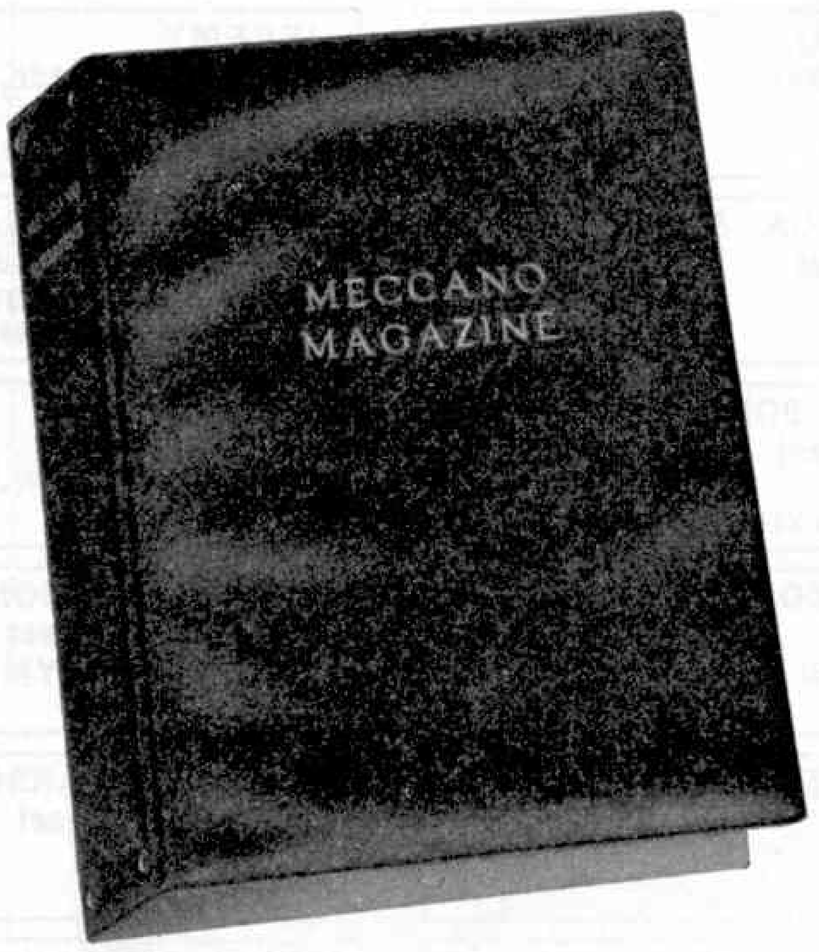

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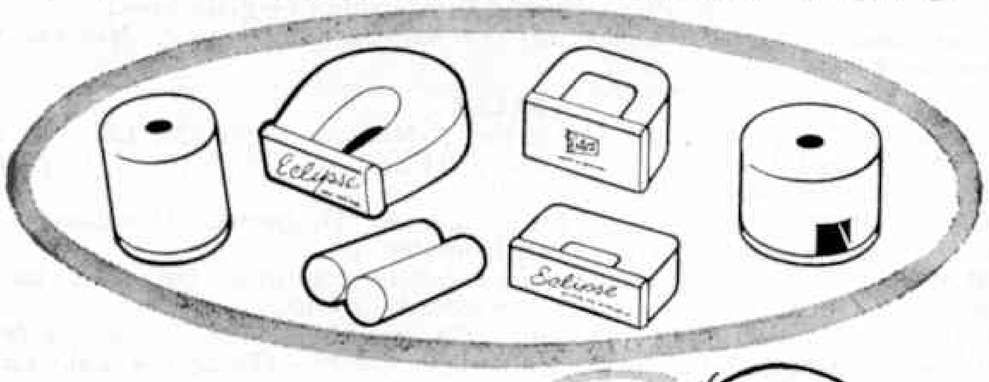

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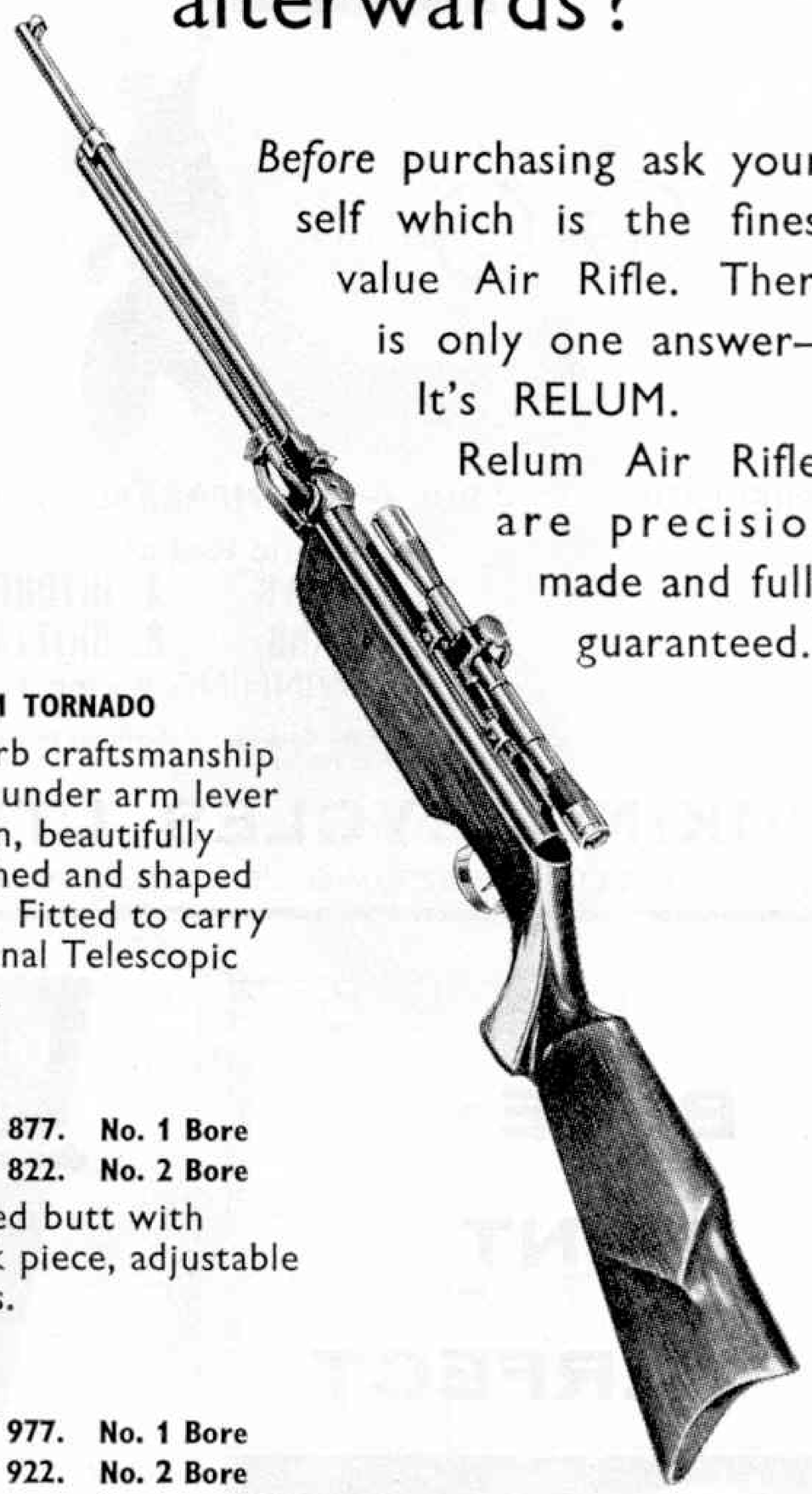

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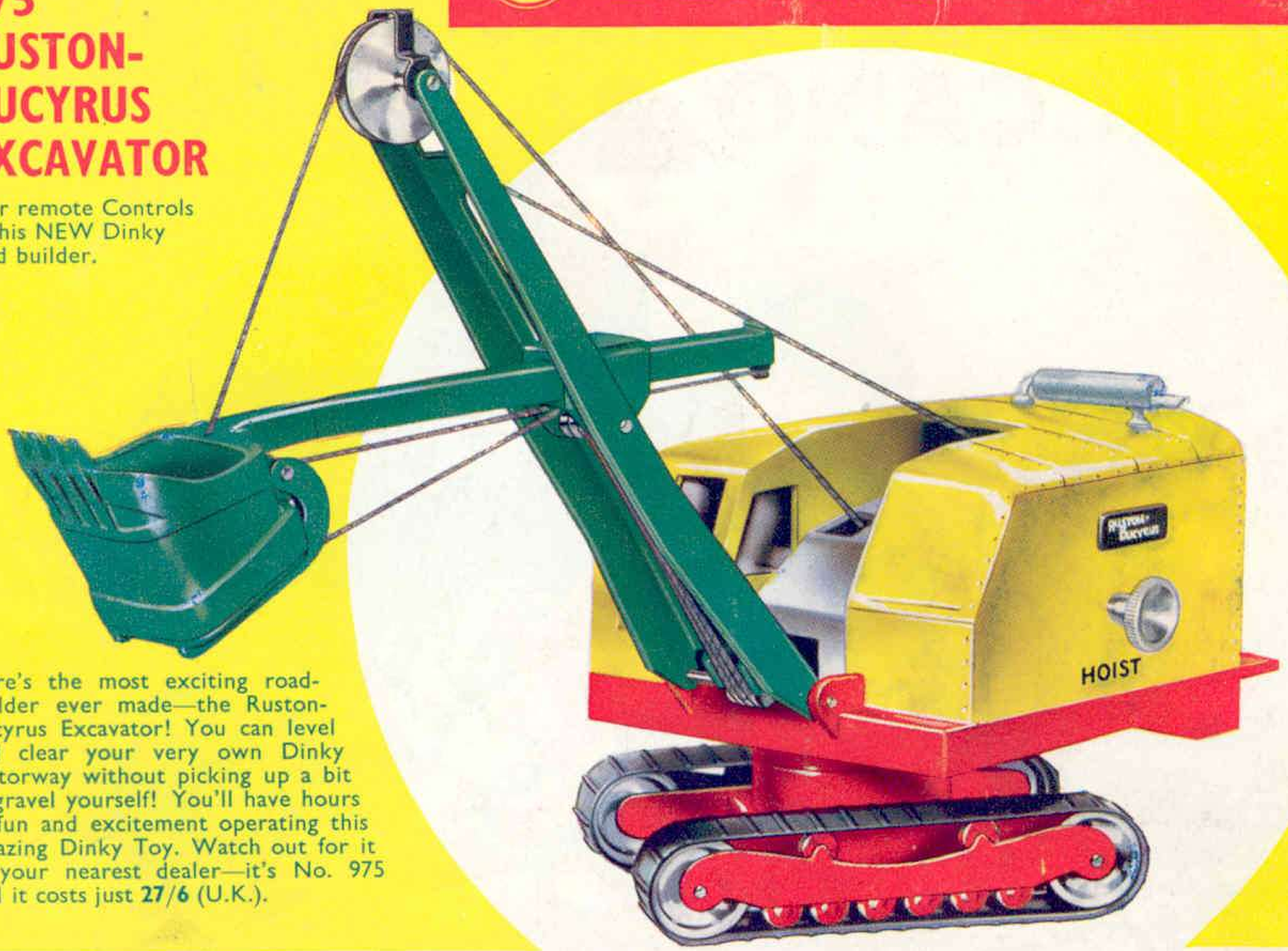

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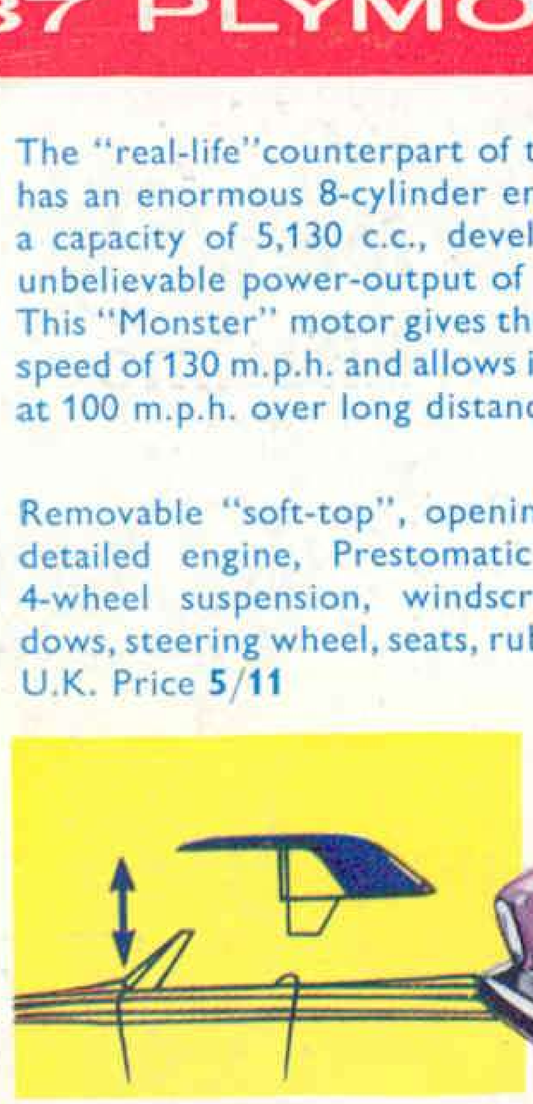

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